

The Oriental Watchman and Herald of **HEALTH**

A MAGAZINE FOR HEALTH HOME AND HAPPINESS

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THE LIGHT STILL SHINES

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MASSAGE

* *

ALCOHOL AND LONGEVITY

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THE STORY BEHIND YOUR
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ETC. ETC.

EDITORIAL



CALENDAR REFORM

THERE is a movement in progress to change the calendar which is in use in practically all countries on earth; that calendar consisting of twelve months beginning with January and ending with December. Many countries have their own local calendars which are in regular use also and which are quite different from this universal one. According to these local calendars the New Year begins and the old one ends at different times so that the first month of the year according to one of these may occur at the middle or any other place in the universal calendar. But the days of the week are the same in all of them. The first day is always Sunday and the seventh is always Saturday.

The proposed New World Calendar is designed to upset the weekly calendar cycle completely, so that Sunday or Saturday or any other day of the week over a period of years will wander from one end of the week to the other. The day called Sunday in the new proposed calendar will in one year fall on Monday, the next year on Tuesday, etc., so that they who for some reason regard one day above another will be completely confused and will have no end of difficulty keeping account of that day. And the days of the week in the racial or local calendars will not correspond to those in this proposed universal calendar. The first day of the week will fall on any day of the other.

The movement for a so-called reformed world calendar has been in progress for thirty or forty years, but only in recent years has it taken on world-wide proportions. It is reported that many powerful organizations, some with government connections in many lands support the movement. Until the present, opposition to such a calendar has been strong and attempts to get it adopted for world-wide use have failed. But much of this opposition, it is said, is being removed, and it is now planned

by the World Calendar Association to get the Calendar adopted by January 1, 1950.

This new calendar proposes a uniform quarter of 91 days, each quarter beginning on Sunday. Four times 91 makes 364, so there will be a day to spare, a day without name and without number, a day without a place in the week, the month, or the quarter. That is in ordinary years. But in leap years there will be two such days. In ordinary years this extra day is to fall between December 30 and January 1, but in leap years the other extra day will follow June 30. In each quarter, except for these orphan days, there will be one month of thirty-one days and two of thirty days each. And all the four quarters are identical. The calendar for any quarter would look like this:

S.	M.	T.	W.	Th.	F.	Sat.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

The 365th day, left without a place in the calendar is to be called Peace Day. The second one so left in leap years has not even been given a name. January 1, 1950 falls on Sunday. The first day of the year as well as of the week, according to each of the two calendars synchronize then, wherefore it is said that that will be a good time to begin using the new calendar. December 31 of 1950 also falls on Sunday. But since there is to be no December 31, but only Peace Day, the day following Peace Day, which is Monday in our

present calendar, will be called Sunday. The day called Sunday then, instead of falling on the first day of the week, will actually fall on the second day. And every time that extra day is dropped out, there will be another move, so that the day called Sunday, but which is no Sunday, will fall on the actual Monday, Tuesday, Wednesday, Thursday, Friday and Saturday in a course of years; and so with each day of the week.

Since this calendar provides uniformity for every quarter of the year, it will be advantageous for business purposes, so it is said. Also for others who have no sincere, or conscientious regard for one day above another. But there are many millions of people in the world who conscientiously regard Friday, Saturday or Sunday as of religious significance, and who are willing to pay something for the observance of these days in a special manner. They abstain from the ordinary secular work and business on these days, in whole or in part, and so sacrifice a part of their profit or other income in order to render worship on that day or to observe it in some other way. Now if it be only the name Friday, Saturday, or Sunday that is venerated, then it will not matter which day of the week be so called. But if it be the sixth day of the week, or the seventh or the first, that is venerated, then it is the day and not the name that is significant. And for these many millions who do profess to attach significance to the day and who observe it conscientiously, great hardship will be imposed by this proposed new calendar if it be adopted for general world use.

There are crores of Mohammedans in Asia and Africa who regard Friday in a special manner. Is it the name Friday that they regard or is it the sixth day of the week? Would they be willing to observe "Friday" of the proposed new calendar on the Sunday of the present calendar? In other words would they willingly ob-

serve "Friday" on the first day of the week? Likewise there are millions of Jews and others who feel a special regard for Saturday, the seventh day of the week. They conscientiously believe that they have divine instruction to do so. Is it to be expected that they should disregard their conscience and age-old customs and traditions which mean more to many of them than material wealth in favour of a new calendar that offers nothing but convenience for business purposes? Is it so essential that business men shall make bigger profits, that the imposition of hardship on millions is justified? The same may be said for Sunday. Is it only the name Sunday that is sacred to millions? Matters it not whether "Sunday" falls on one day or another of the week?

We understand that this proposal has won the approval of societies representing labour, industry, communications, science, education, and even some religious organizations. But we can but wonder whether the latter have considered the full significance of this move, and whether they have taken into account the effect that it would have on their conscientious observance of their holy days. There are of course, millions who are not concerned about making a reality of the religion they profess. Religion as all else, is a matter of convenience, and if material advantage or gain is at stake nothing matters. Such can approve of the proposal, but others will see danger in it to their personal liberties and will have to oppose it with all their might.

turer of electrical equipment. The "pipe" is made of a clear, amber-coloured plastic called fosterite. It is so flexible that it can be tied in a knot, and no matter how it is bent a beam of light aimed in one end comes shining out of the other.

Dr. Richard C. Hitchcock, Westinghouse research engineer, says the light pipes are even better than ordinary air for transmitting light in some cases. "An ordinary flashlight beam travelling any distance through air will diverge or spread," he explains. "Piped the same distance through a fosterite rod, it will reach its target with four or five times the intensity of the flashlight beam."

Although there is no specific commercial application in view for the light pipe, Hitchcock says it could prove useful in special cases where conventional methods of lighting inaccessible places might be too costly or difficult. The "pipe" can be made in pieces up to six feet long, with its diameter varying from one-quarter inch to two inches.—*USIS*.

Vehicle Telephone

TELEPHONE service to automobiles, making it possible to make and receive calls while travelling, has been established in more than sixty cities in the United States and Canada. To serve those travelling along highways, transmitting stations have been installed.

Improved X-1

FOUR X-1-A rocket planes capable of flying an estimated 1,350 miles an hour are being produced by the Bell Aircraft Corporation in the United States. Lawrence Bell, company president, declares the new research planes will be seventy per cent faster than the original X-1, and carry fifty per cent more fuel. The X-1 was the first plane in the United States to fly faster than the speed of sound.

An original X-1 recently left the ground under its own power for the first time. The plane's fuel, weighing 8,177 pounds, was exhausted in two minutes, and the pilot returned his craft to earth eight minutes after the take-off. The X-1 previously had made longer powered flights after being released from a B-29 Superfortress at altitudes above 20,000 feet.—*USIS*.



Cars

IN ONE week the Austin Motor car factory in Birmingham, England, produced 2,705 cars. Said to be the largest number made in any European factory in a similar period of time.

Refugees

THE various nations have about a million war-time refugees to deal with, but thirteen million more have become refugees as the result of post-war expulsions.

Magnet

THE world's largest electro magnet, weighing 2,300 tons built by the University of Columbia can lift strips of steel placed ten feet away.

Scratching Stags

STAGS in the highlands of Scotland are causing great concern to the British Post Office by their affection for telephone poles.

They use these poles as scratching posts, and the effect of constant rubbing is officially declared by Post

Office officials to be astonishing. Recently a number of telephone poles on one of the Scottish moors had to be replaced because they had worn "dangerously thin" as the result of attention by the deer. Wire is to be wound round them in future.

This recalls the joke—if joke it was—that in the days when telegraph poles were first introduced in the Scottish highlands the local inhabitants used them for scratching purposes. An old highlander is said to have called down blessings on the Duke of Argyll for his alleged thoughtfulness in providing these "claw posts."

"Light Pipe"

SCIENTISTS in the United States have made a hollow plastic rod that can carry a beam of light around the sharpest corners and into virtually inaccessible places. Light—which ordinarily travels only in a straight line—shines through the bent rod like water running through a garden hose.

The new rod, called a "light pipe," was developed at the Westinghouse Research Laboratories, Pittsburgh, Pennsylvania, a leading manufac-

Vehicle Production

A TOTAL of 5,282,000 motor vehicles—3,911,000 passenger cars and 1,371,000 trucks and buses—were built by the American automotive industry in 1948, the Automobile Manufacturers' Association (AMA) reports. This is ten per cent above 1947, and the second time that a single year's output in the United States has exceeded 5,000,000 units.

Unconscious

ON FEBRUARY 5, 1943 an electrical engineer in Cincinnati, Ohio, U. S. A. was accidentally struck on the head by a factory pulley and knocked unconscious. In September of 1948, after more than 2,000 days he was still unconscious though alive. Doctors say that there is no hope of his recovery.

Bo Tree

WHEN Gautama Buddha received his first inspiration 2,400 years ago, he was sitting under a tree that has been an object of reverence ever since. An offspring of that Bo tree still stands amid the ancient ruins of Anuradhapura, Ceylon, where it was brought in 246 B.C. However, Buddha's 150,000,000 followers are fearful that the sacred tree is withering away with age and are pouring milk around its trunk in the hope that it will survive.

Anti-Communist

RESULTS, not research, are being demanded of Russian scientists: More food, more medicine, less theory is the order. Denouncing Soviet scholars as "anti-Communist" is part of a campaign to put applied science to work in all fields. Purge now going on is bringing up men who say they can improve crops, make atom bombs, do the things Stalin wants done.

Radio-Activity

BRITISH scientists have established that, by mixing radio-active atoms of phosphates with ordinary fertilizers, it is possible to see how the plant uses the fertilizer with which it is fed. By mixing radio-active carbon dioxide with ordinary carbon dioxide

one can study the method by which plants turn carbon dioxide into food under the influence of sunlight.

In the same way, with radio-active and ordinary iodine it is possible to trace where the iodine is going to when treating the thyroid gland. Radio-active phosphorus can be used to determine the volume of blood in the body, and also for testing how the body utilizes blood.

Radio-active elements can help industry in many ways. In the oil industry a little radio-active carbon introduced into crude oil enables it to be followed in its wanderings round the chemical plant. Metallurgists are making increasing use of this process in studying the rate at which bearings are being worn.

By means of the atomic pile new elements which have not existed on the earth before can be produced.



WHAT THEY SAY

I HAVE been a careful reader and a keen admirer of your valuable "HEALTH" magazine and a subscriber to it for the past ten years.

I have greatly appreciated your magazine and profited much by the priceless information regarding personal health and hygiene that this valuable monthly has made available to me and members of my family.
—K. M. M. So., Malabar.

* * *

I AM taking this opportunity to express my appreciation of the beautiful articles in your "HEALTH" magazine. I like them very much.—
S. F., Penang.

Atomic Bombs

THE press reports that America has super atom bombs, greater in explosive power than those dropped on Hiroshima and Nagasaki. Production of fissionable materials is going on in fifteen states. It is carried on in thirty plants at twenty-five locations. "To house and sustain persons who work in major plants requires two large communities with a combined population of 50,000 persons." But America is still dependent on Canada and the Belgian Congo for most of its uranium.

Long Painting

WHAT is believed to be the longest painting ever made, is nearly 16,000 feet in length. It requires about two hours for exhibition and is passed between two revolving cylinders. It depicts the panorama of the Mississippi River from its source to the city of New Orleans, a distance of 1,200 miles. The painting brought for its artist more than Rs. 600,000.

Amber

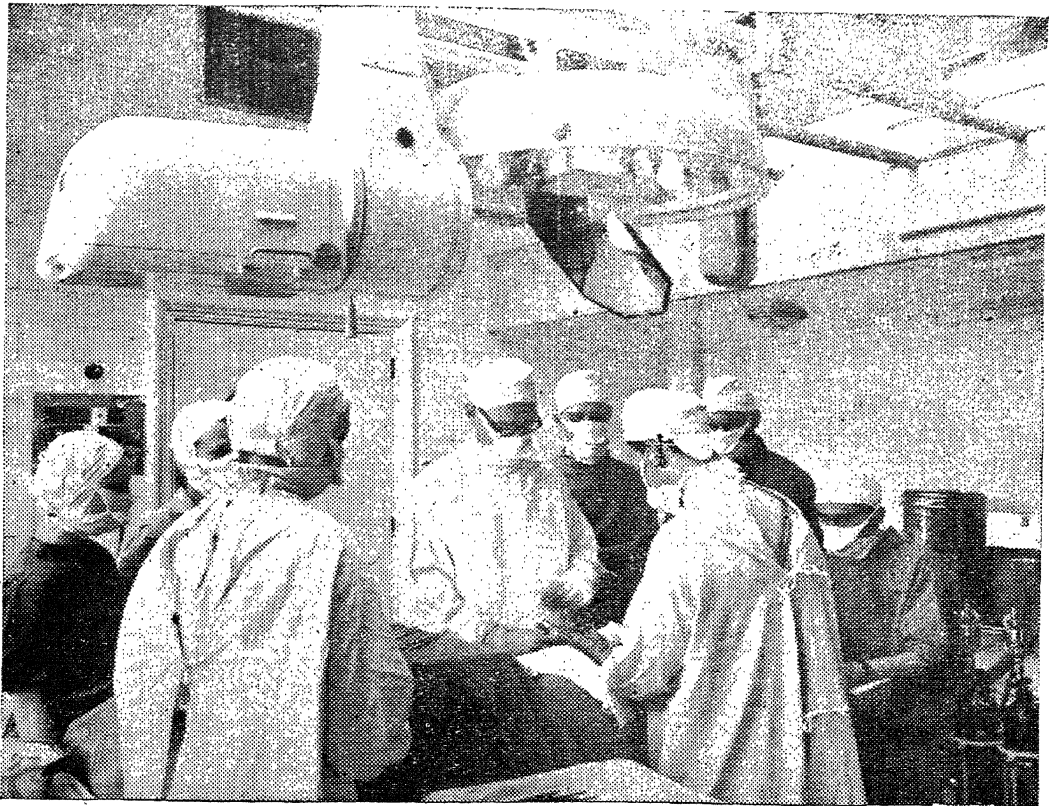
THE Lithuanian amber industry was all but wiped out during the war, but efforts are now being made to revive it. This is a difficult task since out of 100 principal workers whose families carried on the industry for generations, only four have been found alive.

Religion

A REVIVAL of the religious feeling which became dormant, or which was repressed since Turkey became a republic about twenty-five years ago is making itself felt, according to Press reports. Government is making some concessions to insistent demands.

"Cold" Synthetic Rubber Tyres

EARLY development of "cold" synthetic rubber tyres which will travel 75,000 miles and last the average motorist some eight years was forecast today by Dr. Charles Fryling of Philips Petroleum Company. He added that before the end of the year the production of "cold" rubber would probably reach a point where it could compete on favourable terms with the natural product.



NEW WAY TO SURGERY

B.I.S.

The first surgical operation in the world to be televised was recently performed at Guy's Hospital, London. On the table lay a seventeen-year-old boy with acute appendicitis. Above him hung a television camera, arc lamp, and microphone. Every move of the operation was clearly seen by viewers on receivers in a lecture room two floors below the operating theatre. Until now six or seven students have sat in a small glass enclosed gallery above the table but from now on thirty students at a time will be able to watch the whole process on television receivers. The scene in the operating theatre at Guy's Hospital as this was televised.

WHERE LEPERS LIVE IN COMFORT

The leper colony in Malaya, at Sungei Buloh in Selangor State, is a Federal institution, taking lepers from the whole of the union irrespective of nationality. The colony is self-contained and self-subsisting and conditions of living ap-



proximate very much those obtained outside. It has bachelor quarters and homes for married couples and facilities for recreation. The colony has a hospital for the more serious cases. The disease has sporadic attacks when the patient becomes morose, and is then sent to the hospital for treatment. Here again the hospital assistants and dressers are lepers themselves.

B.I.S.

WHEN in May of 1820, a daughter was born into a wealthy English family, who at the time were living in Florence, Italy, not the most imaginative of them could ever have dreamed, that the delicate mite in her beribboned cradle would one day revolutionize the care of the sick, not only throughout the British Empire, but also in the far corners of the earth. Destined to become the famed "Lady With the Lamp," whose dynamic personality and unremitting drive changed the whole conception and organization of hospitals all over the world, and made her the founder of modern trained nursing, Florence Nightingale began early in life to exhibit her absorbing desire to care for the sick. Of herself she says: "The first thought I can remember and the last, was nursing work."

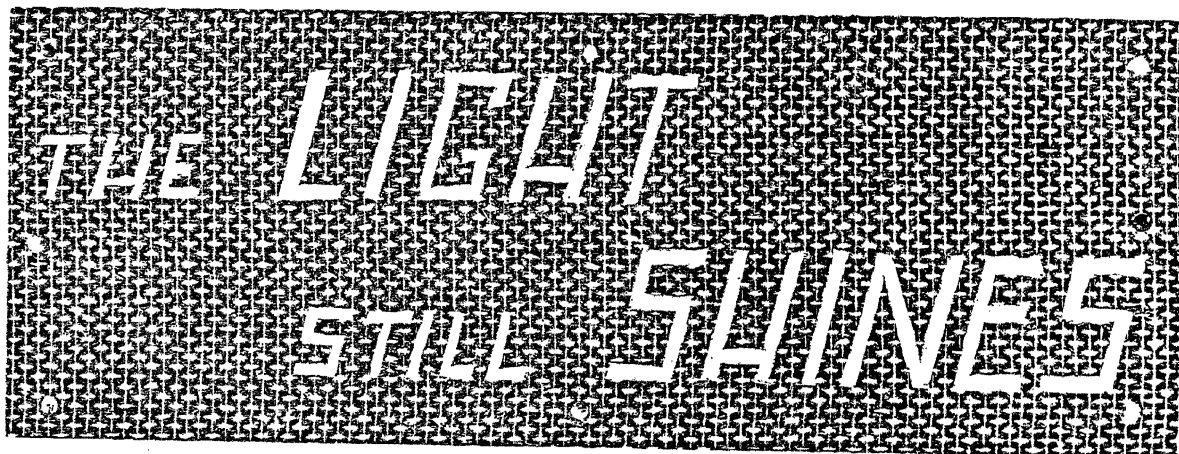
LEONORA LACEY WARRINER, R.N.

Florence Nightingale, the "Lady With the Lamp," lives on in the service rendered by thousands of modern nurses.

As she grew older and became familiar with the appalling conditions in the homes of the poor and in the great city hospitals, she became obsessed with a desire to get into nursing work and to train others to work intelligently. Lytton Strachey, writing of Miss Nightingale's life, gives us a vivid description of the nurse of that day: "A 'nurse' meant then a coarse old woman, always ignorant, usually dirty, often brutal, a Mrs. Gamp, in bunched-up, sordid garments, tip-

up energies and desires. At the age of twenty-five she suddenly announced again her desire to train as a nurse, and wanted to enter Salisbury Hospital at once, hoping later to start a nursing home of her own. She found, as she wrote in her diary, "something like a Protestant sisterhood, without vows, for women of educated feelings." Horrified, her mother immediately set her foot down upon the idea.

Frustrated again in her desire for service, Florence became morbid and melancholy. Though outwardly she lived a life of social gaiety befitting her position, she spent hours secretly devouring medical reports, sanitary regulations, and anything of that nature she could find. When the social season was over each year in London, she spent her time visiting the schools and homes of the



As a child she could not bear to see her sister, a few years older than she, tear up her dolls; but with painful intensity she would sew them up again. She seemed driven by an irresistible force to go to the poor cottages near her father's estate if anyone there were ill, and sit by his bed, doing all the gentle acts of ministry that her childish heart dictated. Her pet dog broke its leg, and with infinite care she put its paw in an elaborate splint, caring for her pet as if it were a human being. In her daydreams she envisioned the stately family country house at Embley Park, England, as a hospital, with herself in charge, directing the nurses and overseeing the care of the patients. She says that she even dreamed of heaven as a place full of sick people with herself as a ministering angel among them.

plunging at the brandy bottle or indulging in worse irregularities. The nurses in the hospitals were especially notorious for immoral conduct; sobriety almost unknown among them; and they could hardly be trusted to carry out the simplest medical duties. Certainly, things have changed since those days; and that they *have* changed is due, far more than to any other human being, to Miss Nightingale herself."—*Eminent Victorians*, page 138.

Naturally her family, knowing the status of nurses at that time, strenuously resisted her desire to obtain a nurse's training. As the years went by, frustration of her cherished plans made her bitter and rebellious. Though naturally religious, she began to despair of her spiritual experience. Her restlessness and unhappiness increased. Life seemed futile, holding no outlet for her pent-

poor, and the wretched workhouses of the great city. Scorning the attractions that wealth and position offered her, she found her greatest happiness among the poor and sick, gaining invaluable experience for her future work. She received several offers of marriage from prominent men, but she refused them all; although in one case, at least, her heart was deeply involved. She feared that marriage might handicap her in the work she hoped to accomplish.

Each year the Nightingale family went abroad, and at these times Florence seized every opportunity to visit the great hospitals of Europe. Her knowledge of French, German, and Italian helped her to gain the information she needed. Once she was able to stay for a short time at a convent school in Rome; again, as a Sister of Charity, in Paris.

Finally she spent three months at the famous nursing institution of Kaiserwerth. This visit crystallized her determination to follow a nurse's career, although it was not until three years later, when she was thirty-four years old, that she finally broke away from parental restraint and became superintendent of a charitable nursing home in London.

A year later the Crimean War broke out. Soon the news of the wretchedness and unspeakable horror of the military hospital at Scutari began to reach London. Miss Nightingale was sent out with a group of nurses under her to take charge. Arriving there, she found conditions in the great military barracks that were used as the hospital terrible beyond description. Because it was built over huge cesspools, fumes from the filth below permeated the whole building, even to the higher storeys. Floors were too rotten to scrub; dirt encrusted walls and ceilings; vermin swarmed, covering the patients who lay in cots or many times on the floor, only eighteen inches apart. Sheets were of canvass, and shirts were nil, so that in many cases the wounded lay in their blood-stained battle garments. No facilities existed for cleaning. Soap, basins, towels, mops, brooms, were all non-existent. China and silver had not yet arrived; the vast amount of medical supplies sent out from England were still tied up in Turkish warehouses. Food was bad and scanty.

Miss Nightingale and her nurses arrived at Scutari ten days after the battle of Balaklava and one day before the battle of Inkerman. The wounded were pouring in, and even the four miles of corridors in the hospital were inadequate to care for them. With characteristic drive and unremitting effort, Florence took charge of the indescribable confusion and wretchedness that reigned on every hand. She has been popularly accepted as the gentle, gracious "Lady With the Lamp," a ministering angel, whose shadow dying men bent to kiss as she passed softly at midnight, lamp in hand, between the miles of wretched cots where the sick and dying lay. But it was a different Florence Nightingale who cut red tape, brought order out of chaos, disregarded official stupidity, and procured nourishing food, clean linen, medicines, and hospital equipment, and established decent sanitary conditions. Strachey says that

she accomplished this "by stern discipline, by rigid attention to detail, by ceaseless labour, by the fixed determination of an indomitable will. Beneath her cool and calm demeanour lurked fierce and passionate fires. As she passed through the wards in her plain dress, so quiet, so unassuming, she struck the casual observer simply as the pattern of a perfect lady; but the keener eye perceived something more than that—the serenity of high deliberation in the scope of the capacious brow, the sign of power in the dominating curve of the thin nose, and the traces of a harsh and dangerous temper."—*Eminent Victorians*, page 156.

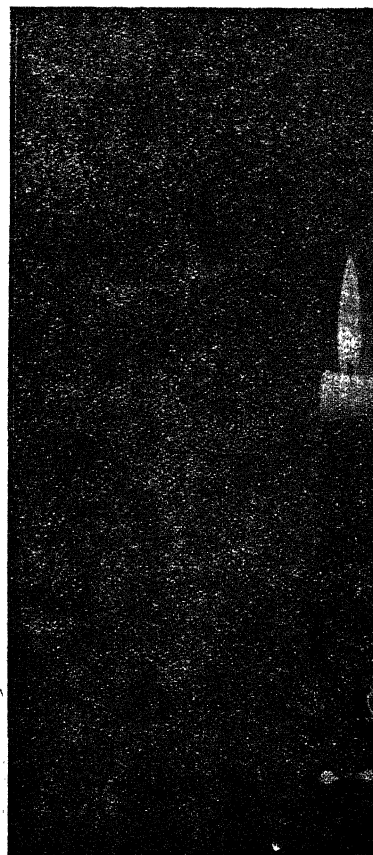
What she accomplished in the Crimea is too well known to repeat in great detail here. The death rate fell from forty-two per cent to two per cent; order and cleanliness reigned; supplies became bountiful; the sick received adequate care; nourishing food was plentiful; proper sanitation was established; reading and recreation rooms were set up; and classes and lectures were conducted.

Four months after the declaration of peace, Florence was back in England. It was then that her real life-work began, which revolutionized hospitals, military and civil, the care of the sick, and pioneered the modern systems of nursing education. Ill in body, confined to her bed for much of the remaining fifty years of her life, and in spite of bitter opposition from men in high places, she wrote, worked, and planned, pushing her reforms with an almost demoniacal energy and drive. Back of her stood Queen Victoria and the prince consort. Sidney Herbert of the War Office, a man of charm and great power, a great personal friend of Miss Nightingale, implemented her plans. Her brother-in-law, Sir Henry Verner, stood by her in parliamentary difficulties. Other powerful friends assisted. Through her efforts a royal commission to look after the health of the army was appointed, and Sidney Herbert placed at its head, but only after long and bitter opposition from powerful interests and heads of the War Office.

Still working incredibly hard from her sickbed, Miss Nightingale wrote her famed *Notes Affecting the Health and Hospital Administration of the British Army*. It contained an

immense amount of information regarding military, statistical, monetary, and architectural subjects. It became the model for the royal commission, and to this day remains an outstanding authority for medical administration of armies.

Her *Notes on Hospitals* was written in 1859. In 1860 the Nightingale School for Nurses opened at St. Thomas Hospital, London. Her work reached stupendous proportions. Workhouses, infirmaries, sordid slums—all felt the influence of her driving force and were immeasurably benefited. Through this remarkable woman's dominating personality, throughout the civilized world a firm foundation was laid for present-day sanitation, modern hospitals, efficient training of nurses, and a thousand reforms in the care of the sick. The light which the "Lady With the Lamp" carried through the dark corridors of Scutari, continues to shine brightly, its glow undimmed by the passing years.



ITS PURPOSE AND APPLICATION

PART II

ROY P. H. CHARLTON, L.P.M.E.,
M.S.F., M.S.S.Ch.

DR. BENJAMIN LEE, of Philadelphia, U. S. A., gives us an excellent definition of massage when he says: "Massage is the communication of motion to the tissues of the living human body from an external force, for therapeutic purposes." The term "massage" comes to us through the French word "masser," meaning "to knead," which in turn is derived from the Greek "massein." The word includes all the various movements used in massage procedures.

If massage is given by a person who is unskilled, or whose knowledge is limited, more harm than good may be caused. On the other hand the majority of the general public is possibly a little doubtful of the benefits of massage simply because they do not understand the principle underlying this particular form of physical treatment.

In what follows, it will be our endeavour to put forward in a non-technical way, these fundamentals, so that should your medical practitioner prescribe massage as part of his treatment, you will have some small idea of the end to be achieved.

TYPES OF MASSAGE PROCEDURE

First, then, an outline of the procedures most generally used. The types of movement are many and varied, according to the method of classification, but they may be con-

veniently grouped into four main classes, viz.:

1. *Effleurage*—Which includes all "stroking" movements.

2. *Petrissage*—Movements where pressure is applied to the part treated. Kneading movements.

3. *Friction*—Usually performed with the thumbs, the deeper tissues being those generally treated with this movement. Recently, deep friction has been advocated in the treatment of joint muscles, tendons, etc. The technique is comparatively new and requires an expert operator to carry out the movements.

4. *Tapotement*—This includes movements of a vibratory nature such as tapping, beating, clapping, etc.

In addition to this general classification some authorities place touch, joint movement, and nerve compression under the heading of massage.

MASSAGE HELPS BODY FUNCTIONS

Numerous investigations carried out over a period of years by able physiologists have proved that without a doubt massage intelligently and skilfully applied is one of the most effective means known of influencing the normal functions of the body.

Effleurage, the stroking movements, may be made in two directions, in

the same direction as the venous flow of blood, or in the opposite direction. Stroking has a relaxing effect on muscles and a sedative effect on the central nervous system. Gentle stroking from the forehead backward over the head to behind the ears will relieve a headache and induce sleep. *Effleurage* is a restful, relaxing type of movement.

Petrissage, and its allied procedures, is a more vigorous movement. The muscles are grasped and squeezed. The movements are designed to stimulate the vital activities of the part treated, local blood supply is increased, and adhesions and nodules, if present, may be removed.

Friction may be either superficial or deep, according to the purpose for which it is applied. Deep friction is used when it is desirable to knead soft tissue on a harder underlying substance, around joints and over flat bony surfaces. It is thought by some authorities that deep friction is the most potent form of massage, and that when it is applied in the correct manner to the correct spot, it possesses great curative power. Friction is used when it is required to break up nodules, such as those which form in fat muscles in fibrositis.

Tapotement consists of rapid, vigorous rhythmic movements ap-

.....

The greatest undeveloped territory in the world lies under your hat.

.....

plied with the fingers or relaxed hand. It may be used to stimulate various organs of the body by reflex action. For the vibratory movements of this group, mechanical vibrations are available, and in many cases the vibrations produced mechanically are much better than those produced manually, since finer and more rapid movements can be made. Vibration is also a stimulatory movement.

Nerve compression calls for a great deal of experience and a special knowledge of nerve anatomy in

order to produce good results. The pressure may be deep, steady or vibratory and is applied over nerve trunks.

The movements we have outlined are those most commonly used, and are but a general classification. There are many variations of these movements, so do not be surprised if the physiotherapist who gives you your treatment uses a procedure that we have not mentioned here.

WHAT MASSAGE DOES

"But," I hear you say, "what do all these movements really do? What are the results of this form of treatment?" Massage increases the blood supply to the part treated and thus improves the nutrition of the muscles. It is also used with excellent results in the treatment of the various forms of rheumatism, and in fibrositis.

In many cases where massage is prescribed, the treatment may seem long and monotonous, but persevere with it. Do not think that because there is no sudden and amazing change in your condition after one treatment that massage is of no avail. Remember that physical treatment calls upon the natural re-

sources of the body to combat disease, and in most cases it takes a little time to get these forces into fighting order.

Massage may be given as a general tonic to patients suffering from neurasthenia, and to patients convalescing after surgical treatment.

All the movements of massage are not applicable to every disease that can be treated. A selection of those most suitable to each individual case are used, and in special cases massage of the whole body is not necessary. The strength of the movements will of course always depend upon the physical condition of the patient, who should never feel exhausted at the conclusion of his treatment.

When given correctly, massage should produce a minimum amount of pain, and some procedures cause no pain at all. Do not think that you have to be punched and slapped, pinched and pulled about, by a masseur or masseuse before the treatment does you any good. Scientific massage produces results by the skilful application of the correct procedures. The days of "skin polishers" are over.

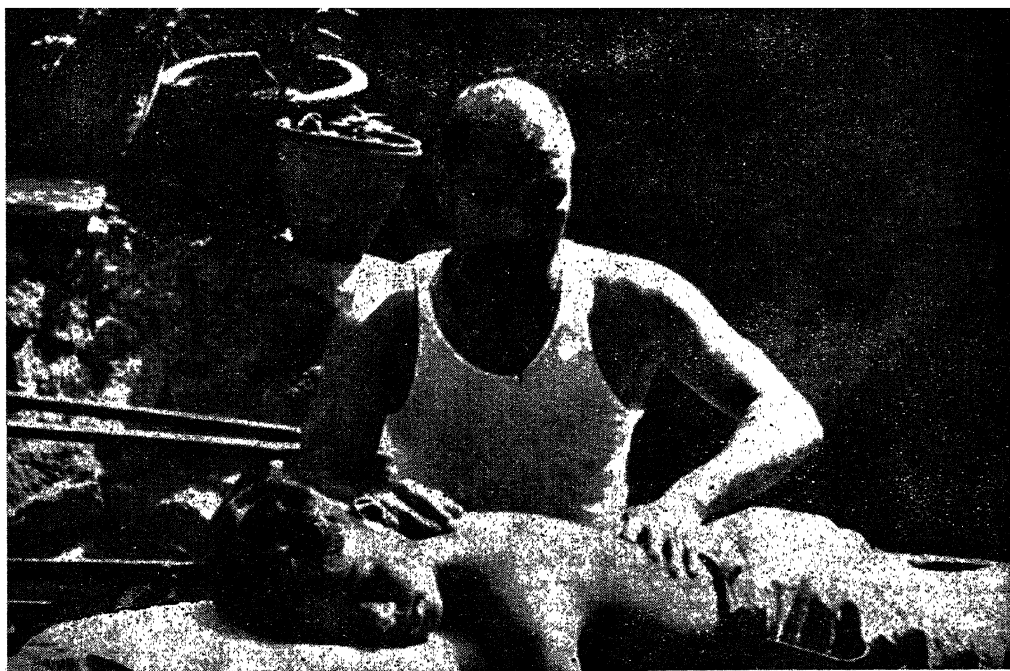
Combined with hydrotherapy and electrotherapy, massage becomes a

very powerful therapeutic agent indeed, and the scope of its application is almost unlimited. For not only can massage be used in the treatment of muscular diseases but also in certain chest and heart diseases. Massage, correctly used, produces a definite improvement in the digestive system and massage produces excellent results when applied to the abdomen in cases of chronic constipation.

One of the beneficial effects of massage is that it increases the blood-making process in certain cases of anæmia. Incidentally, correct diet plays an important part in the treatment of anæmia too.

To sum up then, massage increases the circulation of the blood and lymph, and speeds up the absorption of waste or effused products. It helps to develop muscles and ligaments and has reflex or sympathetic effects through the vasomotor centres on the large internal organs—the liver, spleen, stomach, intestines, kidneys, and the glandular system of the body.

Massage is not a "cure all," any more than any other single branch of medicine, but it can be used to great advantage in many and varied cases.



The proper kind of massage is good treatment for aches and pains.

ALCOHOL AND LONGEVITY

H. C. MOOKERJEE, PH.D.

TODAY most people are aware how essential it is for those who have inherited a healthy body as well as for others who do not have this good fortune, to take intelligent care of themselves, thereby ensuring the enjoyment of perfect health with its corollary, a long and useful life. In most cases, people get sick because, generally speaking, they are not as careful as they ought to be about diet, exercise, rest and abstinence from harmful substances such as opium, alcohol, etc.

MODERATION AND PREMATURE OLD AGE

We sometimes hear stories of men who live a century or more in spite of their indulgence in liquor all throughout their lives. More often than not, the qualification is added that this is so because such people consume alcohol in moderation. Those who do not admit the harmfulness of alcohol tell such tales to prove the correctness of their views. What they fail to do is to tell us about the people who die prematurely in spite of their moderate habits and the reasons of which are given below.

When very small amounts of liquor are taken regularly, the waning of the metabolic activities of the body is frequently so gradual that the victims are almost invariably unaware of its appearance or that it is caused by alcohol. Their unhealthy increase in weight, shortness of breath, and lack of energy, are generally attributed to advancing age. But it is very rarely that it is either realised or, if realised, acknowledged, that the so-called onset of middle age has been hastened by the use of alcohol and, to that extent, the term of life shortened.

When slightly larger amounts, though still within the limits of

moderation, are used regularly, the deterioration of the functions and activities of the body proceeds more slowly than in the case of the heavy drinker. The process of degeneration though comparatively tardy, may be said to be analogous to the gradual decline accompanying old age.

Overtaken almost imperceptibly by premature senility, the victims suffer from one or other of its concomitants—hardening of the arteries, weakness of the heart, digestive or nervous breakdown, calcification of the joints, loss of memory, etc., and die before their time.

These premature deaths, however, are rarely ascribed to their real cause, alcohol. This is mainly because physicians giving the required death certificates, in a spirit of charity, attribute them to the diseases and conditions due to the use of alcohol. This is possible because most of these cases are of the chronic type which makes it easy to assign as the cause of death one or other of the attendant ills.

COMPARATIVE MORTALITY IN VARIOUS OCCUPATIONS

The Registrar General of England and Wales publishes certain statistics every ten years. From a contribution entitled "The Influence of the Drinking of Alcoholic Beverages on the National Health," by Dr. Arthur Newsholme, C.B., M.D., etc., author of *Elements of Vital Statistics*, it appears that this official gives what has been called "comparative mortality figures" showing "the relative number dying in different trades and occupations out of a given number living in those occupations at the same ages."

After examining these statistics for the years 1890-1892, Dr. Newsholme summarized the conclusions

he had arrived at, in the following language:

"If the comparative mortality figure for all men equals 1,000, an equal number of gardeners would only have 568 deaths, teachers 571, grocers 664, doctors 957: while at the other end of the scale are brewers 1,407, innkeepers and inn-servants 1,665, and filemakers 1,791."

Dr. Newsholme asks the very pertinent question, "Why is it that a publican's chance of premature death is three times greater than that of a gardener, and that it is nearly as risky to be engaged in a public house as in the extremely dangerous industry of file-making?"

His answer is that innkeepers and their servants contract and fall victims to many diseases such as cancer, tuberculosis, arterio sclerosis, diseases of the nervous system, gout, etc., generally due to the intemperate habits into which they fall easily on account of the easy availability of liquor.

The conclusions arrived at after the completion of an investigation conducted by another equally competent observer from a somewhat different angle was that "after reaching the age of thirty, the people who worked with alcohol lived as much as fifteen years less than the people in other occupations."

This highly-qualified gentleman had the following explanation to offer for the shortness of life of these people: "The reason they had such short lives was, of course, due to the fact that they could drink alcohol any time they wanted it."

The commercial application of the above as well as of similar other well-known facts is to be found in the practice adopted by insurance companies and referred to in the following extract from the standard work, *System of Medicine*, by Pro-

fessor Sir Clifford Allbutt, M.D., F.R.C.P., "It is customary to add 50 per cent extra for such dangerous occupations as the drink trade, even if classed as A1 by the medical examiner; but it is probably wiser to follow the rule of the more cautious offices, and absolutely to decline to accept proposals in such cases."

EFFECTS OF PAST EXCESSES

That the effects of past excesses in reducing the span of life persist in a marked way even when heavy drinking is replaced by moderation was proved by Dr. Arthur Hunter, actuary of the New York Life Insurance Company and Chairman of the Central Bureau of Medico-Actuarial Mortality Investigation, when on the 10th of December, 1914, he delivered an address before the annual meeting of the Association of Life Insurance Presidents. Among other things, he gave the results of an investigation covering the records of two million lives over a period of twenty-five years furnished by forty-three of the leading life insurance companies of the United States and Canada. The attention of the reader is drawn to the following extract from his speech: "It is certain that abstainers live longer than persons who use alcoholic beverages. Among the men who admitted that they had taken alcohol occasionally to excess in the past, but whose habits were considered satisfactory when they were insured, were two hundred and eighty-nine deaths, while there would have been only one hundred and ninety deaths had this group been made up of insured lives in general. The extra mortality was, therefore, over fifty per cent, which was equivalent to a reduction of over four years in the average life of these men."

VALUE OF INSURANCE RECORDS

While it is admitted on all sides that the heavy drinker dies much earlier than the abstainer, those interested in this problem wanted to know what happens to the so-called moderate drinker; that is one who drinks small quantities every day and who therefore never gets what we call drunk and perhaps by looking at whom we could not tell that he is in anyway different from people who never drink.

It need hardly be added that no correct conclusion on such a matter can be based on knowledge derived from a few cases. If we want to find an answer to the question as to what

is the effect of alcohol on the average moderate drinker, we have to examine fairly large numbers of such drinkers.

The only extensive and reliable records on how alcohol affects the length of human life are those of life insurance companies. Remembering that these concerns never accept heavy drinkers and that proper care is exercised to prevent the fraudulent inclusion of consumers of excessive amounts of liquor among their clients, we have in them a large body of reliable data on which to base our conclusions.

The information from this source is regarded as dependable as, by the nature of their business, insurance companies are compelled to maintain careful records of the health and habits of persons insured with them because those who live long are more profitable to them than those who die too early.

DEATH RATES OF ABSTAINERS AND NON-ABSTAINERS

It can be shown from the records of old and well-established insurance concerns that, as a group, moderate drinkers who only are accepted as clients by such organizations, have a higher death rate than teetotallers in which connection mention may be made of the circumstances under which the United Kingdom Temperance and General Provident Institution was founded.

About the middle of the fourth decade of the last century, a Quaker applied to an English life insurance concern for life insurance and was asked to pay ten per cent extra because, as a teetotaller, he was supposed to possess subnormal vitality. This annoyed him so much that he immediately proceeded to organize the United Kingdom Temperance and General Provident Institution of London. This kept its teetotal and drinking clients in two separate classes and published, in 1903, the results of its experiment extending over nearly sixty years. It was found that "Moderate drinkers...died at the rate of 104 per cent of the death table, and the total abstainers at the rate of only 74.3 per cent."

Reference may also be made to the findings arrived at after investigations based on the records of the Abstainer and General Insurance Co., Ltd., of England. Abstainers and non-abstainers who had insured their lives with this office were kept in two groups during a long series of years

in the course of which 14,000 deaths had occurred. Some of these persons who had been teetotallers had taken to drink and some who had used liquor had, later on, given it up, but as transfers from one class to the other had been very carefully excluded from both classes, the information thus available supplies unchallengeable evidence of the longer life enjoyed by abstainers. The conclusions reached have been summarized as follows:

"Up to the age of 55, the death-rate of non-abstainers at any age is never less than 45 per cent higher than that of abstainers, and at some ages 94 per cent higher than the latter. Between 60 and 64, it is 32 per cent higher; between 65 and 69, it is 20 per cent higher; between 70 and 74, it is 16 per cent higher than that of abstainers, so that the superiority of the latter persists at nearly every age."

The superiority in regard to life expectancy enjoyed by the person who never touches liquor over the drinker, as shown by this investigation, was such that this concern gave special concessions to the former so that, under its new scheme, the teetotaller aged 30 became entitled to be insured as if he were a non-abstainer aged 24. To put it differently, in the view of this insurance office, the abstainer aged 30 has a superiority of five years of vitality over the moderate drinker. And, what is more, this particular concern was prepared to do business with the public on this basis.

The New York Mutual Life Insurance Company after examining its records for the fourteen-year period 1875-1889, came to the conclusion that "among insured abstainers the death rate was only 78 per cent of the expected rate; among non-abstainers it was 96 per cent."

The general experience of a large number of life offices of Great Britain, in the language of Dr. Arthur Newsholme, is that "out of every 100,000 starting at the age of 20, among the abstainers 53,044 reach the age of 70, while among the moderate drinkers only 42,109 reach this age."

To sum up, what we have proved is that heavy drinkers die in large numbers at a premature age and also that, as compared with abstainers, this is equally true of those who do not drink so heavily and who, therefore, are not disallowed from insuring their lives.

WHEN it comes to nutrition, fats and oils mean just calories to many people. The caloric value of fats is extremely important but their niche in nutrition is broader than that. Those who are interested in nutrition will want to know about all the functions of fats.

Butter, cream, margarine, hydrogenated vegetable shortenings, and cooking and salad oils are the common fats used in food preparation. These are sometimes called "visible" fats. The so-called "invisible" fats are not necessarily difficult to see, but are part of a food which is not primarily a fat. Examples of foods containing "invisible" fats are egg yolks, milk, cheese from whole milk, meat, nuts, chocolate, and avocados.

Both "visible" and "invisible" fats are well digested. In fact, an average of ninety-five per cent of the fat eaten normally will be digested. The slow rate at which fats leave the stomach and are absorbed is an advantage and has nothing to do with digestibility. This slowness of digestion delays the return of hunger. Thus fats can give a feeling of satisfaction when they are included in the meal, even if the meal is small.

CALORY CONTENT

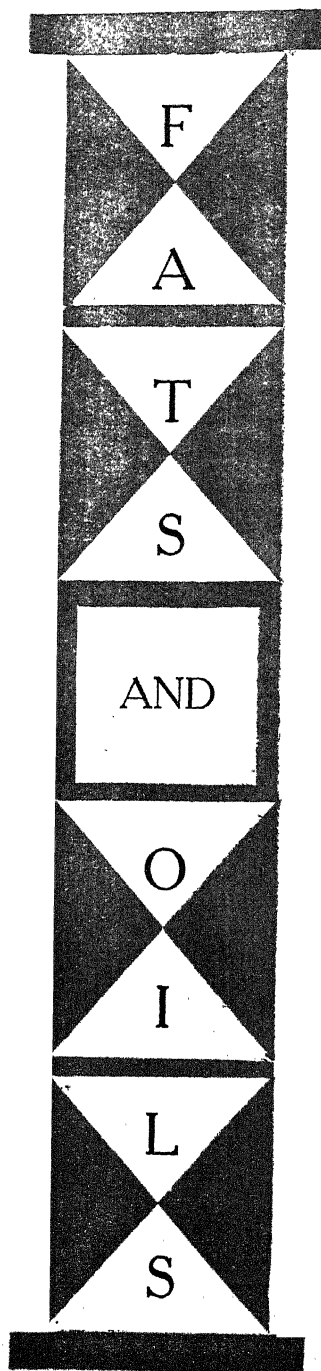
All fats and oils are about equal in the amount of calories they supply. In addition to their energy value, butter and margarine are excellent sources of vitamin A.

When it comes to calories, on a weight basis, fats supply more than twice the energy available from carbohydrate or protein. Although the body is able to make fat from carbohydrate and protein, it is a good plan to include in the diet some calories in the compact form of fat.

Nutrition authorities recommend that at least twenty to twenty-five per cent of the total calories in the average diet be supplied by fat. For people who do hard physical work, and for children and teen-agers, the suggested percentage is raised to thirty to thirty-five. The so-called "invisible" fats are expected to account for one-half to two-thirds of these percentages, the rest to be supplied by butter, margarine, hydrogenated vegetable shortenings, oil, and other "visible" fats.

When food fats are digested they are broken up into glycerol and fatty acids, the chemical substances of which they are composed. The body then re-makes the fats for its own use if they are not needed for immediate energy. The fatty acids

Their Niche in Nutrition



are re-combined in such a way that the newly made fats have some properties of body fat and yet, in certain instances, may keep some properties of the food fat.

Three fatty acids of those which are unsaturated, i.e., are not fully hydrogenated, are thought to be nutritionally essential. Although the human need for these fatty acids is not known, it is suggested that they make up at least one per cent of the total calories. In the normal diet "invisible" fats amply fulfil this allowance.

In the body, fats are the most important form of stored energy. Until used up, reserve fat may be drawn upon to furnish calories if the food supply is cut below the energy requirement.

One function of fat stored in layers under the skin is to protect the body against too great loss of heat when in cold surroundings. Other functions of this fat are to protect the body from injury due to bumps and jolts and to fill out the figure when it might otherwise look gaunt. Fat is also very important as padding around the internal organs, especially the kidneys. This stored fat helps to keep the organs in place.

ESSENTIAL TO GROWTH

Fats are a necessary part of the structure and function of all tissues. They also enable the body to absorb and make use of fat-soluble vitamins. In addition, butter and margarine are carriers of vitamin A.

Butter is a natural source of vitamin A and the precursor, carotene, which is changed into vitamin A in the body. Margarine is fortified with 15,000 U. S. P. units of vitamin A per pound.

Vitamin A is essential for growth and development. It has several other functions, too. Vitamin A plays a part in the chemical reactions of the eye which are responsible for vision. It is vital to the health of the skin and of the mucous membranes including those of the respiratory system and the alimentary tract. It also has some bearing on freedom from infectious diseases and speed of recovery from such illnesses.

The body is capable of storing a quantity of vitamin A in the liver. This reserve, built up from the diet, helps protect the body for a time if the vitamin A intake is too low. —*What's New In Home Economics.*

WHY BE IN A HURRY?

D. A. DELAFIELD

PARCELS and letters transported by fast freight or air mail are not the only fast-moving things stamped with the word *rush*. Modern man, always in a hurry, and not always knowing where he is going, has the word *rush* written all over his taut face. It is our special sin, and none of us really like it. But we are caught in the onward rush of geared-up mortals who comply with the norms of a mechanical society. Few of us set the pace, but most of us try to keep step with the masses in order to make our way in life.

We do well to keep moving forward, but we can make haste without hurrying. We can accomplish more if we plan our work. Then we should work our plans. Every minute should count for something. Following an ordered programme of life, we make progress because we have a sense of direction. Setting our sails, we are driven by the fair winds of providence to the goal. We reach port because we were headed that way. We knew where we were going.

Then why be in a hurry? A little time for prayer and planning at the beginning of the day would solve the rush problem. What would you think of a carpenter who built houses without blue-prints? What would you think of a general who sent his troops into battle without a plan of attack? Strategy is another word for victory in battle. Even though it is only paper work it counts in the end, and life is a battle.

So why continue rushing through life as tight as a bow string? Why push your jaded nerves to the snapping point, existing on black coffee,



tea, and cigarettes? In the end abused nature will collect heavy tribute. Would it not be wiser to call a halt now? Settle down, think things through, and plan a programme. You will find that you can go farther, faster, and higher, quicker if you slow down long enough to make a plan for yourself, and follow it.

Don't be a dirigible. The motor makes a lot of noise, but the big bag of gas does not get there very fast. You will have more friends and you will influence more people if you take this to heart. In all God's world man is the only creature in a hurry. Some animals make haste, but they never hurry, and they never worry either. Did you ever hear of a horse or a cow having a nervous breakdown? Did your family cat ever develop a case of stomach ulcers? How about your dog? As long as he lives he will escape headaches, hangovers, and shingles. But if the animals lived as some of us do, they would not be able to take it. Let us really show that we are superior creatures by acting the part and living well-planned, unhurried lives.

THE study of a patient's disease involves first of all a recitation by the patient or others of his symptoms which have made their appearance, and an examination of the patient to see how this particular disease has altered his physical being. This has been the procedure since time out of mind, and this relationship between the patient and his physician is one of the oldest of human relationships. No doubt the sick individuals of ancient Egypt, Babylon, Assyria, and Greece were as heartened by the appearance of the physician then as folks are today when his motor car stops at the curb and he enters with his little bag of tricks. But the science of medicine has made tremendous strides in the many centuries which have intervened between that day and this.

For literally thousands of years the physician was able to learn his art by hearing or reading what his predecessors had observed and concluded, and 'pondering over conclusions that were based upon faulty information as to the structure and function of the human body. Nevertheless, it is remarkable what astute observers some of these ancients were. For example, the books of Hippocrates, which were presumed to have been written between 2,300 and 2,700 years ago, are full of gems of wisdom which appeal to the well-trained doctor today. The written works of the learned physicians of all ages have been the textbooks of succeeding generations of practitioners. In this sense, the science of medicine is an accumulative art. Each generation adds to the knowledge of his fathers, correcting minor details of certain aspects of disease, discarding theories which are found to be erroneous or faulty. New discoveries are promptly utilized in the diagnosis and treatment of disease.

It would be too tedious to the lay reader to make any extensive review of the discoveries of medicine throughout its long history, for this story is a history in itself. It is pertinent to point out some of the discoveries in the past century and a half, for it is within this relatively short period that the greatest advances in this science have come. It is of interest to know that only a comparatively few short years ago was the stethoscope introduced as a medical instrument which has opened new fields of study of the behaviour of certain diseases of the heart and

lungs. Now every graduate physician is presumed to have a good working knowledge of this important instrument.

It was scarcely a century ago that the microscope was put to use in the study of human tissues in an effort to understand their normal structure as well as the changes produced by disease. The microscope also made possible the science of bacteriology, less than seventy-five years old. The surgeons who attended the wounded of the American Civil War considered infection in a wound as a necessary evil, and surgical antisepsis or asepsis was unknown. The knowledge of bacterial diseases has made possible the wonderful development of serums and vaccines used in the prevention and cure of disease. It has also led to the development of the group of sulfonamide drugs, which have had so much publicity in the past few years, and of the still newer penicillin, the miracle medicine. There were more soldiers that died of typhoid fever alone than from bullets in the Spanish-American War. In World War II, thanks to the knowledge of control of this disease by vaccination, typhoid fever was essentially a nonentity.

The science of anaesthesia is now just about a century old. It is hard to believe that throughout the long hard centuries leading up to the last one, those who were obliged to endure the suffering incident to surgery had little to assuage their pain aside from the minor effects of alcoholic intoxication sometimes resorted to. Perhaps the only alternatives were the use of cocaine derivatives thought to be used by the ancient Incas, or the production of unconsciousness by partial strangulation, utilized by the Assyrians before minor operations. Today the patient is mercifully put to sleep,

and he is blissfully oblivious of the experience that his forebears must have remembered with horror the rest of their lives.

Asepsis and the use of anaesthetics have made possible the modern refinement of the surgical art. A century ago the stouthearted surgeon simply rolled up his sleeves, steelled his nerves against the outcries of the patient, and performed his operation as quickly as possible. Then the patient was left to the residual potencies of his resistance against the almost certain wound infection and the tender mercies of untrained attendants. Now, with the assurance that there will be no infection (unless the surgical lesion in itself is infected) and that the patient is insensitive to the necessary surgical trauma, the surgeon can give his prime attention to the work which has to be done. It is not surprising that surgical skill has risen to undreamed of perfection at the hands of those properly trained.

The introduction of the use of X-rays in medical diagnosis took place less than fifty years ago. With this facility the diagnosis of internal disease has been remarkably facilitated. Tuberculosis of the lungs can be discovered in its earliest stages, when cure can be most readily effected. The treatment of fractures has become almost an exact science, for not only can the exact situation be discovered on the X-ray film, but the progress of healing can be checked at suitable intervals. It has become possible to explore in considerable detail the structural changes in the internal viscera—the heart and lungs, the stomach and intestines, the kidneys and bladder; and even the brain and spinal cord

THE STORY BEHIND

PHILIP A. CARPENTER, M.D.



YOUR

DOCTOR

can be studied by specialized methods. All this makes possible a more exact diagnosis of the nature of disease and usually at a much earlier period than was possible even a short generation ago.

Meanwhile, the advances in chemistry and pharmacy have made possible the preparation of drugs in very pure state and the compounding of medicines to a degree impossible a few years ago. The production of penicillin in quantities sufficient for both military and civilian use during the war was indeed a miracle which rivals the production of synthetic rubber and aluminium. The large pharmaceutical houses in leading countries in the world have set such high standards for themselves that their products are almost perfection itself in the degree of purity and exactness of manufacture.

The advances in the field of preventive medicine are also very noteworthy. The scourges of smallpox, typhus, typhoid fever, yellow fever, and malaria which afflicted entire countries and continents are now rare, and these diseases at best incidental in the civilized world. We are well on the way to the marked reduction, and, we trust, ultimate elimination of the plagues of pneumonia, tuberculosis, syphilis, and

other infectious diseases. The increased knowledge in the fields of nutrition has gone far to eliminate or reduce such diseases as beriberi, scurvy, pellagra, and the like. Modern sanitation has in itself reduced the incidence of the bacterial diarrhoeas so common a century ago, and modern medical methods have reduced the incidence and morbidity of the common infectious diseases of childhood. All these triumphs are due to the efforts at *preventing* disease, efforts infinitely more desirable than those of simply curing it when it has once seized upon the patient. The amount of suffering, grief, and financial loss which have thus been prevented is incalculable.

Last but not least in the great advances in medical science which this past fifty years has witnessed is the development of medical education to a degree where individuals graduated as practitioners of medicine are well trained to cope with the everyday medical problems of their patients. Our grandfathers were at the mercies of men who learned medicine at the hands of practising tutors who were willing to have a young man around to sweep the office, run errands and the like, and learn what they could of the healing art on the fly. If perchance the

would-be doctor had enough money to go to the medical schools of the day, he might fall into the hands of the operators of a diploma mill, who were more interested in the tuition than in medical instruction. The last of these mills has been eliminated within the memory of most adults. Today the high standards of medical education are set by the leaders in medicine and are supported by the laws of the government.

And it is not only with the training of the physician that medical science is concerned but also with the training of specialists. Only a few decades ago surgeons were made by associating with a well-known surgeon, or more often by the self-made route. A noted surgeon made the statement that the path of a self-made surgeon of those days was marked by the gravestones of his patients. Today an aspiring surgeon must take a rigorous course of prescribed training under capable surgeons. He gains his early technical training on animals, and only when he is capable of doing careful work is he entrusted with operations on the human subject, and then under the watchful eye of his skilful tutors. By the time he is accredited by the specialty boards he is prepared to do skilful work in diagnosis and treatment. In this effort the medical profession itself is far in advance of the legal requirements for the law recognizes only "physicians and surgeons" as licensed after completion of the standard course in medici



WITHOUT THE FIELD

HYDROPONICS is the science of growing plants without soil. Derived from the Greek, it means literally "water-working." To ensure healthy growth, plants need air, light, and water. In addition, mineral salts and support are provided by the earth in which they strike root. But soil is in no way a perfect medium for crop production. Erosion, drought, and flood are big drawbacks, while it also harbours weeds, pests, and germs. In many areas there is either no soil, or else the geography of the region prohibits its use. Consequently, soil cannot be depended upon for providing food and support to plants in all regions.

The method of soilless farming is worth serious consideration. It has many advantages over soil. The output of flowers is greater, cost of manure is halved, the problem of obtaining stable manure is abolished, twenty-five per cent increase in keeping qualities is obtained, weeding is abolished, thereby saving labour and ensuring a cleaner and interesting method, which gives complete control over the plants.

RESEARCH

Over a century ago scientists discovered that if the mineral salts of chemicals essential to plant growth were supplied direct to the growing crop, earth could be dispensed with. Consequently research work was started and in 1929 the research workers at California succeeded in growing hydroponic tomato vines twenty-five feet long. However, the research did not end here and was carried on in different countries awaiting solution of the various problems. Experiments conducted in the next decade produced several practicable systems of soilless culture. The outbreak of war saw extensive commercial hydroponicums operating. It is believed that the American Installations produced nearly four million pounds of fresh vegetables by hydroponic methods in 1945-46.

English carnation growers are switching over to soilless culture in ever increasing numbers. Russia, France, South Africa, and Germany are some of the countries in which hydroponics is receiving the atten-

tion it deserves. Research at the Government of West Bengal's experimental farm at Kalimpong was started in 1946. Here the main object was to evolve a system of hydroponics suitable for India.

RISE IN CROP YIELD

The yields of some of the crops under hydroponic cultivation have been increased by as much as four times the normal amount. The production of maize in India was raised from the normal average of under 2,000 pounds per acre to one of over 6,000 pounds by soilless cultural methods at Kalimpong.

Hydroponics has been found to have many advantages over conventional methods of horticulture. Briefly, these include higher crop yields combined with reduction in growing area, relative freedom from soil diseases and very consistent crops, the quality of the produce being excellent. Weeds are practically non-existent, while standard methods and automatic operation mean less labour, less cost, and no hard manual work. Quicker growth naturally results; besides, there is better control of crops, no dirt and no smells. Water-logging never occurs owing to good drainage.

There is no distinction between a chemically grown plant and a naturally reared one in point of flavour, nor have analyses shown any difference in vitamin content. American experiments have proved that it is possible to produce crops of unique composition and dietary value by means of hydroponics.

HOW THEY ARE GROWN

Plants are grown in troughs constructed from any suitable material and filled to a depth of six inches with a coarse mineral aggregate, preferably a mixture of about five parts of rock chips or gravel (3/8 to 1/2 inch grade) and one part of rock dust or sand. Nutrient salts (or chemicals) are applied dry in a stipulated ratio to the area of the trough, once a week or ten days, by sprinkling them evenly between plant rows, afterwards watering them in.

Recently, the fertilizer salts have been made up in tablet form. These tablets are inserted fortnightly in the growing medium at the general rate of half-an-ounce to each square yard of trough space. Normal irri-

gation is provided in the dry season to ensure daily water, but during the monsoon reliance is placed on the rainfall which is regularly checked by a gauge. The aggregate of growing medium in the troughs must be kept moist enough to allow healthy plant growth.

The main chemicals which should be supplied to a plant growing in a hydroponicum are: Sodium nitrate or ammonium sulphate, potassium sulphate, magnesium sulphate and a phosphate. Some lime will probably be needed as well. Several hundred different chemical mixtures have been proposed for use in hydroponics, but the actual choice of fertilizer salts is immaterial provided all the necessary elements are present. Suitable adjustments are made to allow for different types of water and aggregate or growing medium.

Fertilizer tablets containing complete nutrient mixtures for soilless cultivation in different areas and at various seasons have been prepared from successful formulæ used at Kalimpong and are now available in Calcutta. If these tablets are used all necessity of the gardener preparing his or her own mixtures is obviated. Provided district and province are known, tablets suitable for that area can be supplied by reputable manufacturers from stock.

HYDROPONIC YIELDS

A few statistics showing hydroponic yields obtained at Kalimpong during 1946-47, contrasted with conventional Indian averages in soil, make interesting reading. The agricultural figure per acre is given second, the hydroponic equivalent first (both in pounds): Rice 4,800, 750-900; wheat 4,100, 600; potatoes 10,500, 800-1,000; maize 5,600, 1,500; soya-beans 1,500, 600; oats 2,500, 850; beetroots 20,000, 9,000; peas 14,000, 2,000; and tomatoes 140 tons, 3-5 tons. In the opening months of 1948 a crop of tomatoes in a hydroponicum yielded an average of eleven pounds per plant, excluding "chats." Cauliflowers did extremely well, averaging 30,000 pounds per acre, while dwarf French beans yielded very nearly a pound per square foot of trough space, the first pods being ready for consumption five and a half weeks after sowing. As a general rule the monthly cost of cultivation of a hydroponicum, one acre in extent, will aver-

age under Rs. 20. Slight variations occur, according to season, period of growth of different crops or formulae used, etc.

BIG POSSIBILITIES

Hydroponics is a new science. Few people even know of its existence and fewer still are aware of its tremendous possibilities. Again, many wrongly imagine that soilless culture is a complicated and expensive business. India's chief problem today is food. Menaced as this country is by the constant threat of famine, urgent measures are necessary if disaster is to be avoided.

Soilless cultivation, conducted according to the Kalimpong method, could be practised in India for producing more food—especially more tubers and vegetables. It is particularly useful in large cities like Bombay, which can be made self-supporting in vegetables, including potatoes and to some extent in rice, wheat, and other grains. Millions of tons of nourishing foodstuffs could be grown in hydroponicums by town residents and workers, not only on house and factory roofs, but also in window-boxes, on backyards, etc. Immense barren lands could be made productive and crops raised at air stations, isolated villages, or in sterile and arid regions. Commercial hydroponics can give India all the extra food she needs and at the same time afford lucrative employment to thousands of the citizens of this sub-continent.—*Times of India*.



TYPHOID AND ITS PREVENTION

K. K. RAO, *Medical Practitioner*

THE fever which is so prevalent in our country was named typhoid (enteric) by Dr. Louis in 1829. It is a specific infectious fever running for a period of about three weeks and the severe type may run even up to six weeks. In our day-to-day life, when any fever runs continuously for a week or more, it is only natural for us to suspect that it is a case of enteric fever.

Enteric fever is widely known all over the world and particularly in India. The disease is most prevalent in the autumn months. Both men and women are equally subject to the disease, principally when between fifteen and twenty-five years of age. It is the general opinion that enteric fever is rare in children, but many cases have been observed in children and so a proper diagnosis of enteric fever should not be ruled out on account of age.

Typhoid fever occurs due to the presence of a specific germ, known as the bacillus of Eberth or bacillus Typhosus. "This bacillus," says Dr. Osler, "is a rather short, thick, flagellated, motile bacillus, with rounded ends. In the early stages of the disease the bacilli circulate in the blood, causing temperature and other symptoms."

During the first week there will be a "stair-case" temperature i.e., rising one to two degrees in the evening and falling one degree in the morning, every day reaching 103 or 104 degrees. The tongue is coated and the patient grows weaker every day. In some cases the bowels may be loose and in some cases they may be constipated. Tenderness in the right iliac fossa, enlargement of the spleen and mesenteric glands are common features of enteric fever.

At the commencement of the second week the temperature remains at a uniform level but symptoms become more aggravated.

In the third week symptoms disappear gradually and the temperature becomes normal.

The modes of infection are of two kinds—direct and indirect.

Directly it is communicated to the attendants by lack of proper precaution in handling patients or their excreta. Infection sometimes clings to the bed of the patient, and successive patients seem to get the attack when occupying the same bed.

Indirectly it is communicated through infected water and food. Milk and other articles of food act as vehicles of infection by becoming contaminated either by carriers, flies, or infected water. Tanks and wells are often polluted by the washing of dirty clothes in them which have been infected with the excreta of a typhoid patient. Cooking utensils, plates, etc., are often washed with the contaminated water and as a result, several cases occur in the

same house. Flies visiting and feeding alternatively on infected faecal matter and then on food cause a great source of infection.

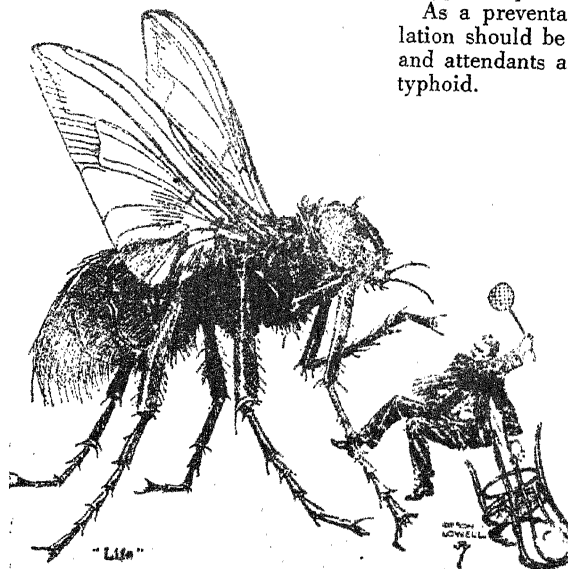
We people suffer and succumb to this disease only for want of proper preventative measures.

As the saying goes, "Prevention is better than cure." In other words, one should try his best to prevent a disease rather than be careless and then run for medical aid. The main points that should be observed in preventing the disease are as follows:

The drainage and water-supply should be improved. Disinfection of excreta, and articles contaminated by the excreta should be carefully carried out. Stools, urine, and other discharges should be received in vessels containing strong disinfectants, and they should either be deeply entrenched or burnt along with soiled rags, etc. Soiled clothes should be placed in a strong solution of disinfectant and then boiled thoroughly. Proper cleanliness should be observed by attendants. Isolation, cleanliness, disinfection of stools and of carriers should be rigidly enforced.

Sanitary conditions should be carefully investigated. The milk supply requires thorough investigation as there is every possibility of its being contaminated by infected water. Milk and drinking water should be boiled. All food should be protected from flies and dust. Hands should be disinfected with strong antiseptic lotion after serving a typhoid patient.

As a preventative measure, inoculation should be given to the family and attendants and those exposed to typhoid.



Flies are dangerous carriers of typhoid.

YOU have no space for a garden? Why not try sprouting legumes to supplement your fresh vegetables? You don't need a foot of ground to grow this vegetable. It can be planted any day in the year. It needs neither soil nor sunshine. And in three to fifteen days (depending on the room temperature) you may harvest your crop.

Take soybeans for example. One-fourth cup of soybeans will produce from two to six cups of sprouts. The sprouts can be eaten raw or cooked. They require no scrubbing or peeling, and can be cooked and made ready to eat in from ten to twenty minutes.

You may wish to sprout enough for several occasions at one time. Soybean sprouts are kept the same as any other fresh vegetable—in a cool place for several days, or blanched two or three minutes and then frozen.

Soybean sprouts are richer in vitamin C and several of the B vitamins than most fresh vegetables; in fact, they are much richer in these than the dry legume, as a result of the sprouting process. Many outstanding scientists consider the protein of the legume itself equal to that of meat, milk, and eggs; however, studies indicate that the protein quality of the sprouts is superior even to that of the dry legume. Soybeans are highly alkaline.

With so many fine qualities it is no wonder that soybean sprouts have been called the "miracle child" of soybeans.

Varieties that sprout quickly and uniformly are the Peking, Cayuga, and Oototan. The Seneca, Ontario, Richland, Chief, Illini, and Manchu varieties are also good. Beans for sprouting should be top-quality seed, fully mature, but not more than one year old.

The Mung bean, which is closely related to the soybean, is also an excellent legume for sprouting.

METHOD FOR SPROUTING

Sort the beans, throwing out any that are broken, split, chipped, or shrivelled (these will not sprout and are apt to cause spoilage).

Wash the beans, and soak them over-night in three cups of warm water to every cup of beans to be sprouted.

The next morning pour off the soaking water and place the beans in

a container five or six inches deep—one that will allow complete drainage. A clean flower pot, colander, or rustproof sieve, will do if it is large enough to allow the beans to increase four to six times in volume. A cloth or rustproof wire mesh in the bottom of the flower pot will prevent the beans from falling through.

Flood the beans four or five times each day with lukewarm water and then drain immediately, being careful not to break the tender sprouts. Keep the sprouts in a dark place or protected from the light. For fastest growth the room temperature should be around 70 to 80 degrees Fahrenheit.

A pinch of chlorinated lime in the water morning and evening or just once during the day will help prevent mould and bacterial growth, but this is not always necessary.

Another method is to roll the soaked beans in a wet towel and sprinkle it thoroughly several times

BEAN SPROUTS

**GROW YOUR OWN
INDOORS WITHOUT A
FOOT OF SOIL**

LULU TABLOCK, B.S., Dietitian

a day, always allowing for free drainage.

If sprouting large quantities of beans, use cool water for flooding them when they become warm by the second day. During the last two days pieces of ice may be placed over the beans.

When the sprouts are two to three inches long they are ready for use. Both beans and sprouts are good to eat. Wash them thoroughly to remove the loose skins. Though they are edible raw they are better still if blanched one to three minutes.

HOW TO USE SOYBEAN SPROUTS

In Green Mixed Salads: Up to one-fourth of the total bulk can be raw or blanched soybean sprouts. Season with finely chopped onion or a trace of garlic. Just before serving, pour over them a French dressing, to which has been added a little peanut butter.

In Fruit Salads: Use in place of nuts, as in Waldorf salad, or have

sprouts make up to one-third of the total bulk of the ingredients of salads containing something tart, such as apple or pineapple.

In Cooked Dishes: Add as late as possible to the other ingredients and serve immediately when done, so they won't lose their crispness. Use sauteed. Cook five minutes and butter, or add to cream sauce. Add raw to omelette, souffle, stew, fricassee, chop suey, and many other dishes. They give a nice touch of crispness.

CHOICE BEAN SPROUT RECIPES

SCRAMBLED EGGS WITH SPROUTED SOYBEANS

Half cup onion tops, chopped fine; 1 tablespoonful fat; 1½ teaspoonfuls salt; 4 eggs, slightly beaten; 2 cups sprouted soybeans.

Add chopped onion-tops and salt to slightly beaten eggs. Let stand five to ten minutes. Wash the sprouted soybeans and cook them in skillet with just the water that clings to them. Stir to prevent their sticking to pan. Add a tablespoonful of fat, and cook a few minutes longer. Add egg mixture and stir. Cook until done. Serve immediately.

CHOP SUEY

Half pound soy cheese, diced; 1 cup mushrooms; 2 cups diced onions; 2 cups diced celery; 1 cup sprouts or chop suey vegetables; (water chestnuts, bamboo shoots, soybean sprouts).

Prepare a medium cream sauce seasoned as desired—with Marmite, soy sauce, or the like.

Cut soy cheese or curd into cubes and brown in butter. Also brown the mushrooms. Then add the diced onions, celery, sprouts, and sliced water chestnuts. Pour the sauce over this and bake in casserole in a moderate oven one and a half to two hours. The mushrooms may be omitted from the recipe. When done, serve immediately.

The ingredients of this recipe may also be prepared by first cooking the diced celery, onion, and mushrooms: and then braizing them in fat and water; adding the desired seasonings (Marmite, etc.): and lastly adding the bean sprouts. Cover and cook for from five to ten minutes—until the bean sprouts are tender. Toss together lightly and serve immediately.



DENNY'S RED HAT

MARIE LARSON

DENNY sat with his back against the tree stump on the green hillside overlooking the railroad tracks. He pushed his new red hat carefully over his eyes so it wouldn't be crushed against the stump. He was proud of that hat! No more sun-burned nose now from being in the sun so much keeping the cow away from the tracks! He liked his hat almost as much as his father liked Betsy, the prize cow, that grazed contentedly on the tall grass beside Denny.

Denny sighed. It was awfully cloudy today, so he couldn't really appreciate his new hat. He could even take it off, only he didn't trust Betsy. She had tried to chew it up once already.

Denny peeked from under the red brim and stretched. "Eat a lot, Betsy," he told the cow. "It's nearly time for the afternoon express train. When the train passes, we can go home."

Denny squirmed into a comfortable position. He pushed his hat off his face again and tipped his peeled nose skyward. It was then that a raindrop hit him on the cheek. Denny liked to let the rain hit him in the face, but not today. He thought of the red hat and ran for shelter. He crawled under an overhanging rock and stayed there. And well he did, or his precious hat would have been ruined, for it rained as if the

contents of every cloud had been dumped upon that very hillside.

Little streams of water began to join other streams here and there. Presently there were larger streams gushing down the hill in a mad race. The streams grew bigger and bigger. Denny was glad he had a safe, dry place from which to watch the rain. When the storm finally ceased, the sun came out slowly.

Denny waited until he was sure his hat would not get wet, and then he came out to look for Betsy. On the hillside where Betsy had been grazing, the grass was matted and muddy. Betsy was not feeding there.

"Betsy! Betsy!" Denny called, becoming alarmed, for he remembered how valuable Betsy was. He trumped his hands and called as he ran down the hillside. It must be almost time for the train. If Betsy was on the tracks—

He heard a soft "moo" from somewhere around the deep curve, and he hurried in that direction. Then he could see Betsy standing calmly by the tracks, but Denny could see something else, too—something that made his heart almost stop beating. He saw a washed out trail that one of those tiny floods had made in its course down the hillside, a trail that had eaten into the bank of earth beneath the rails. The track was sagging on one side.

If the train hit that place in the rails, it could easily be derailed,

Denny thought. He was sure the driver should be warned. If he could put a warning flag on the tracks—something red!

Denny waved his arms and sent Betsy trotting away from the railroad. Then he ran down the tracks away from the weakened spot. He found a stick and pushed it into the ground in the centre of the tracks. He took off the new red hat and hung it over the stick. Then Denny ran back to the washout.

Soon he heard the train rumbling nearer and nearer. His heart beat fast. He began waving his arms and shouting, even though he knew he couldn't be heard above the noise. He saw the driver put his head out. He had seen the red hat! Then there was a screech of brakes as the train began to slow down. He saw the new red hat go under the train, crushed. And then the engine puffed to a stop.

Denny gulped in a big breath. His hat was gone! His red hat! He stood quietly staring as the driver swung down from the cab.

"What is the meaning of this?" the driver growled, pushing back his striped cap in an impatient gesture.

Denny pointed to the sagging rails. The driver walked along the tracks to the washed-out place. He whistled in great surprise.

"It's a good thing we didn't hit that!" he exclaimed.

Denny drew himself up. He had done the right thing. The driver told him that and thanked him. And what was a hat compared to a train? Betsy didn't like red hats anyway.

LAUGHTER

DR. P. D. SHARMA

THE faculty of laughter is perhaps one of the most important and useful of human faculties. It has been given to us to serve a singularly wise and significant purpose. This faculty could be looked upon from different points of view by people belonging to different schools of thought and hence the interpretations are varied and interesting. All great men in the domain of prose and poetry have interpreted it differently according to their angle of vision and outlook.

It is Nature's device for exercising the internal organs and giving us pleasure at the same time. This act commences in the lungs and dia-

phragm, setting the liver, stomach, and other internal organs into quick vibrations. The heart beats faster, thus increasing the circulation and respiration. This brings a glowing warmth to the whole system. Laugh-

ter brightens the eye, expands the chest and tends to restore that exquisite poise or balance, which we call health. In fact, laughter brings into harmonious action all the functions of the body.

We know well that a jolly physician is often better than all his pills. By association of ideas, I am reminded of a physician, who was styled as the "laughing doctor." Doctor Arud Khurud resided in a city in the Punjab and was always full of smiles, thus presenting the happiest kind of appearance. His good humour was said to be contagious. His presence, his cheerful and hopeful advice were what his patients valued most. The "laughing doctor" was a very successful practitioner despite his dealing sparingly in drugs.

A lovely smile is a gateway to human hearts and is said to be a wonderful aid to health. Emerson's smile was a perpetual benediction upon all who knew him. "The most completely lost of all days" said Chamfort, "is the one, in which we have not laughed."

Sterne said, "I live in constant endeavour to fence against all the infirmities of ill-health and other evils by mirth." I am led to think that every time a man smiles, much more so when he laughs, it adds something to his fragment of life. Cheerful people live long in our memory. We remember joy more readily than sorrow and always look back with tenderness on the jolly and cheerful. One must never lose sight of the golden maxims: "Blessed are the joymakers," "A merry heart doeth good like a medicine" and "Laugh and the world laughs with you; weep and you weep alone."

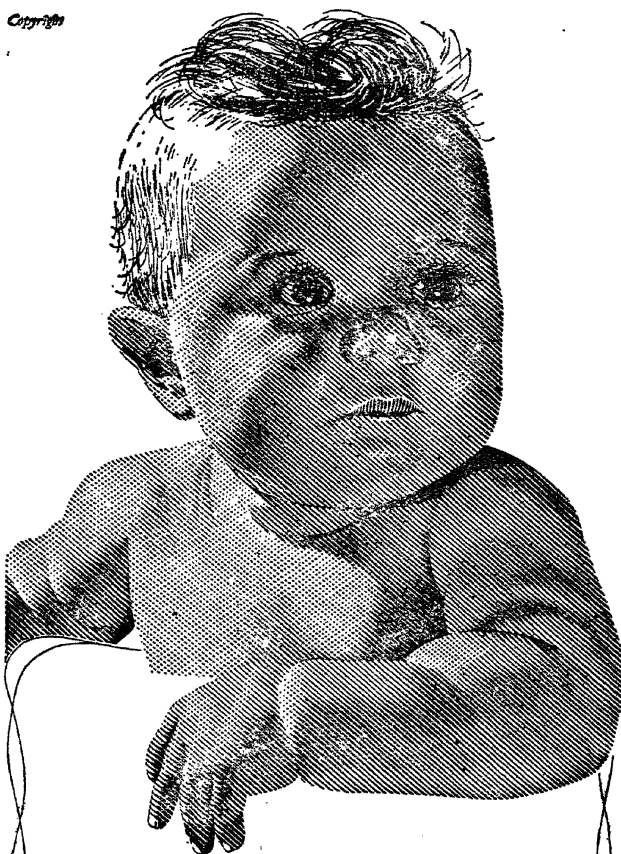
Sir Walter Scott, who was always in the habit of saying "Give me an honest laugh," is believed to have been one of the happiest men in the world. He had a kind word and pleasant smile for every one and everybody loved him in return.

Addison was perfectly justified in saying "One should take good care not to grow too wise for so great a pleasure as laughter." I may add that no one ever found happiness, who did not manufacture it for himself. We know well that happiness and laughter are synonymous.

I may mention in passing that cheerfulness and contentment are greater beautifiers and are more famous preservers of good looks than expensive cosmetics (creams, brilliantines, lotions, powders, rouges, and lipsticks) manufactured in the factories of so-called modern civilization, and which sell like hot cakes in the market these days.

It was said of Cromwell, known

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to us as one of the leading men of action in the seventeenth century, that he never lost his hopeful smile during all the vicissitudes of his life.

"All who joy would win
Must share it—Happiness was
born a twin."

This evidently shows how great and indispensable the faculty of laughter is for all of us. In fact, rational people cannot do without it. Mind and body are inseparably related. An optimistic and cheerful outlook on one's disease is a very desirable, nay, necessary factor in bringing about an early recovery. Laughter may justifiably be said to be a panacea for all ills to which human flesh is heir. Happy faces vibrate and radiate cheer and healthy laughter in all with whom they associate. They encourage the sick, inspire the despondent and fill the sinking soul with a ray of bright hope and a happy outlook. We know full well that often a smile and an encouraging word in passing has lifted many a burden from a weary soul.

In fact, laughter is an all-round recuperative tonic. No man honestly striving after success and making a mark in life can possibly afford to do without it in some measure. It therefore behoves us all to try to practise this wonderful trait henceforth, and see the difference it makes in our lives. This will entail no grave risk or handicap in life for any one. I cannot conclude my article better than by quoting the following verses of a celebrated poet.

If I knew the box where the
smiles are kept,

No matter how large the key,
Or strong the bolt, I would try
so hard,

'Twould open, I know, for me;
Then over the land, the sea,
broadcast

I'd scatter the smiles to play,
That the children's faces might
hold them fast

For many and many a day.

If I knew a box that was large
enough,

To hold all the frowns I meet,
I would gather them every one

From nursery, school, and
street,

Then folding and holding, I'd
pack them in,

And turn the monster key,
And hire a giant to drop the box,
To the depths of the deep, deep
sea.

RECIPES



SOME "DON'TS" IN COOKING VEGETABLES

IN COOKING vegetables observe a few rules that will preserve their vitamin content and will help them to be most nourishing in the building up of health.

1. Don't overcook vegetables. Cook them until they are just tender.
2. Don't use too much water but cook with as little water as possible.
3. Don't keep vegetables cooking after they are tender; serve them at once.
4. Don't discard any green leaves or vegetable stalks; cook them and use them in soups or curries.
5. Don't use soda in preserving the colour of vegetables; it destroys the vitamin content and other food elements.
6. Don't throw away water in which potatoes and other vegetables have been cooked. Use it in soups, gravies and curries.

Observe these rules and the vitamins and minerals in your food will be utilized to the utmost.

CABBAGE AND TOMATO CASSEROLE

One onion, minced; $\frac{1}{4}$ cup vegetable fat; 3 cups cooked cabbage; 1 cup bread crumbs or cracker crumbs; 1 cup tomato sauce; 1 sweet capsicum, chopped.

Saute onion in fat until lightly browned. Add tomato sauce. Arrange in a buttered casserole, alternate layers of cabbage, crumbs, chopped capsicum and tomato sauce. Top with crumbs. Dot with pieces of butter and bake in hot oven for twenty or twenty-five minutes. Serves six.

MINTED LIMA BEANS

Take half a pound of fresh Lima beans and two or three sprigs of fresh mint. Cover and place in boiling water in a saucepan for thirty-five minutes or in a pressure cooker eight minutes. Add two tablespoonfuls of melted butter and salt to taste. (The water should be almost nil.) Serve at once.

BAKED TOMATOES

Six firm, ripe tomatoes; 1 cup bread crumbs; $\frac{1}{2}$ cup chopped celery; 1 tablespoonful minced onion; 1 tablespoonful minced parsley; salt to taste.

Cut a slice from the stem end of each tomato and scoop out the centres. Press the scooped-out portions through a sieve, discarding the seeds. Saute the finely chopped celery in a little fat; also the minced onion. Add this to the sieved tomato pulp and mix with bread crumbs and parsley; season with salt. Fill the tomato shells with the mixture. Place in baking dish and place a small piece of butter on top of each tomato. Bake in a moderate oven fifteen or twenty minutes. Serves six.

BAKED ONIONS—TURKISH STYLE

Six large onions; 1 teaspoonful ground cinnamon; 2 tablespoonfuls butter; salt to taste.

Peel onions and put in boiling salted water until tender letting them boil uncovered. Then when tender drain and place in well-oiled baking dish. Dot with butter and sprinkle with cinnamon. Bake in moderate oven for fifteen or twenty minutes. Serves six.

CARAMEL CREAM PUDDING

Two cups milk; $\frac{1}{4}$ cup sugar; 1 egg, beaten; $\frac{1}{8}$ teaspoonful salt; 2 tablespoonfuls cornflour; $\frac{1}{2}$ teaspoonful vanilla; 1 cup evaporated milk or cream.

Melt half the sugar until it is a light-brown syrup in a saucepan over the fire. Add $\frac{1}{4}$ cup water, heat and let it cook down to a thick syrup. Add this to the scalding hot milk. Mix all other ingredients together except the cream and add to the former mixture. Stir over the fire until thick. Then pour out in a shallow dish to cool. When cooled add the vanilla and fold in the whipped cream or the whipped evaporated milk. (To whip evaporated milk place in refrigerator or on ice for two hours before whipping.) Serves four to

DELECTABLE PIE

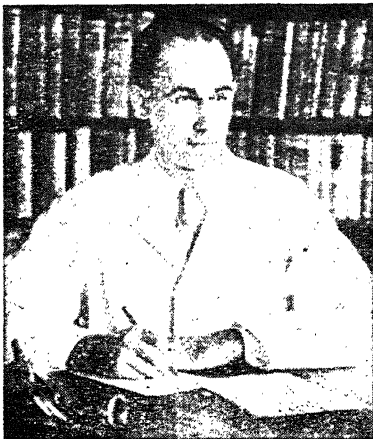
One cup sugar; 2 tablespoons cornflour; $\frac{1}{2}$ cup hot water; 2 egg whites; 1 teaspoonful vanilla; $\frac{1}{2}$ cup thick cream; $\frac{1}{2}$ cup desiccated coconut.

Mix sugar and cornflour, add the boiling water and cook in a hot water bath or double boiler until thick. Pour over this the stiffly beaten egg whites; beat twenty minutes and add vanilla. Pour mixture into a baked pie crust and cool. Top with whipped cream into which the coconut has been mixed.

PAPAYA ICE-CREAM

One tin evaporated milk; 1 medium papaya, very ripe; $\frac{1}{2}$ cup sugar; $\frac{1}{2}$ teaspoonful your favourite essence.

The tin of milk should be kept in the refrigerator over night unopened. The papaya also should be very cold, as should the mixing bowl and the beater. Pour milk into the bowl and beat with a rotary egg beater until thick like whipped cream. The papaya should be put through a sieve and added to the beaten milk with the sugar. Beat again until very stiff. Pour into refrigerator tray and freeze at the highest speed. After it is frozen lower the speed. This serves six.



DOCTOR SAYS

1. This question and answer service is free only to regular subscribers.

2. No attempt will be made to treat disease nor to take the place of a regular physician in caring for individual cases.

3. All questions must be addressed to The Doctor Says. Correspondence personally with the doctor is not available through this service.

4. Questions to which personal answers are desired must be accompanied by addressed and stamped envelopes. Answers cannot be expected under one month.

5. Make questions short and to the point. Type them or write them very clearly.

6. Questions and answers will be published only if they are of such a nature as to be of general interest and without objection, but no names will be published. Address "The Doctor Says," ORIENTAL WATCHMAN AND HERALD OF HEALTH, P. O. Box 35, Poona 1.

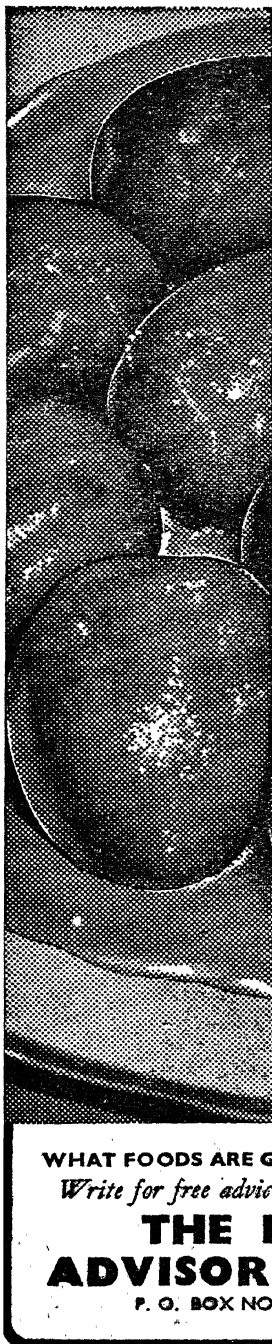
LOSS OF HAIR GROWTH ON THE FACE: Ques.—"Three months ago the hair stopped growing on my left jaw. Now this affliction is spreading to the rest of my face. Please advise me what drugs I should take to get better."

Ans.—Loss of growth of hair on the face may be due to alopecia areata or to ringworm (really fungus) infection. Alopecia areata is a condition characterized by localized loss of hair, sometimes occurring quite suddenly. Usually the hair grows in again and at first is usually white. The majority of cases develop normal colouring of the hair after a certain amount of time. If one is afflicted with this disease one should look to one's general health as sometimes infected teeth or tonsils seem to be the cause of the condition. Also one should get plenty of sleep, take a varied nutritious diet and live a temperate, regular life. The condition commonly called ringworm is really a fungus infection. Commonly it occurs between the toes, in the groin, and sometimes elsewhere on the body. There are many proprietary preparations on the market for the home treatment of this condition. Whitfield's ointment and Mycozol are two good ones. If the infection does not yield to either of these it is well to see your doctor

INFORMATION ON THE PROPERTIES OF VARIOUS MILKS: Ques.—"(1) Does casein separated from milk or buttermilk contain all the amount of calcium of the full-cream whole milk? (2) Do sweetened condensed milks in small tin containers, and powdered milks like Klim, Glaxo, etc., contain fully all the nutritive principles of the equivalent quantities of fresh milk?"

Ans.—(1) Cheese or curds contain

about ninety per cent of the calcium of whole milk. Casein itself is a protein and does not contain any calcium at all. (2) Sweetened condensed milk has a great deal (about twenty-five per cent) of added sugar. Otherwise it is the same as whole milk. Klim and Glaxo are simply dehydrated milk and contain all the fat, carbohydrate, protein and minerals in the original milk in the same proportions.



Gulab Jamuns

made with **DALDA**

Prepare thin syrup from 1 lb. of sugar, add few drops of rose-water and keep aside warm. Into 1 tablespoon of maida (or arrowroot) rub in 1 teaspoon of Dalda. Grind ½ lb. of khoa to fine powder, sift and mix well with maida by rubbing. Thoroughly knead mixture to a stiff dough, using very little water. Shape dough into small elongated balls. Heat Dalda and fry on very low fire. When gulab jamuns are light brown all over, drain, and soak in warm syrup.

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HARD WATER: Ques.—"What are the comparative effects of hard water and soft water on human intestines?"

Ans.—"Certain hard waters, if their content of magnesium carbonates and sulphates is sufficiently high, produce a laxative effect. But such waters are somewhat distasteful. The ordinary mild hard waters containing calcium produce no appreciable effect on the intestines."

SWELLING OF THE LYMPH GLANDS: Ques.

—"My wife, aged thirty-two years has a lymphatic glandular enlargement on the left side of her neck. We have tried the following treatments: Deep X-ray, ultra-violet ray, calcium gluconate injections and she is now going to take calcium gluconate and iodine injections. She has had her lungs X-rayed and it is diagnosed that it is not a tubercular gland. Do you advise further deep X-ray treatment? Some doctors are of the opinion that she should be operated upon."

Ans.—"The conditions which cause persistent swelling of the lymph glands along the side of the neck are relatively few. The most common of these is tuberculosis. This may effect only these glands and the disease may not appear elsewhere in the body. The treatment is the same as for tuberculosis in other parts of the body—rest, good food, boiled milk, sunshine, fresh air. Occasionally deep X-ray is beneficial and in some cases surgery. The other diseases which cause swelling of the lymphoids in the neck are more rare and are usually diagnosed accurately only by removing a small gland and sending it in alcohol or formaldehyde to the tissue laboratory for microscopical examination. Some of these rare diseases respond to deep X-ray and some do not. In any case anyone with swelling of the lymph glands of the neck should be under the care of a competent physician."

A S T H M A ; TUBERCULOSIS; COUGH; NASAL GROWTH: Ques.

—" (1) My brother who has spent most of his life abroad for studies and other things, gets immediately affected with cold whenever he comes to our home. This happens to him at no other place. What is the cause of this? (2) I had an attack of double pneumonia at the age of eight. Because of this will I be susceptible to tuberculosis? (3) My mother coughs very frequently during the night time, and has done so for the past fifteen years. The cough increases during the summer and especially when she comes in contact with the dust from corn or when she does any manual work. We have tried many medicines to cure her but none seem to have any effect. What do you suggest? (4) My five-year-old niece has a growth in her nostrils which interferes with speaking. She is a very sensitive girl and because a surgical operation would give her pain we would like to know of some other remedy for this."

Ans.—" (1) Your brother's affliction appears to be asthmatic. Asthma may be divided into different groups according to its cause. One group includes a large

percentage of cases and this type is caused by sensitivity to some substance in the environment, such as horse dandruff or the dust from a feather pillow or an article of diet such as tomatoes or strawberries. The treatment of this type of case depends upon the detection and removal or desensitization to the offending substance. Many patients can tell the doctor fairly accurately what substances they are sensitive to. Sometimes the substances can be located by means of skin tests with various articles. These tests can be done by an allergist for he is the type of doctor who specializes in the treatment of asthma. Another group includes all other cases of asthma due to any and all other causes. Most asthmatic persons should be under a doctor's care. It is unfortunately true that only a small percentage can be cured. However, about sixty-five per cent can be relieved by modern treatment. It is hoped that some suitable remedy will eventually be found for the remaining thirty-five per cent. (2) Tuberculosis is a germ disease which usually effects the lungs but may also effect the lymph glands, intestines or bones. The earliest symptoms are: a. Cough, any cough which lasts longer than two weeks should be investigated by a doctor. b. Slight rise in temperature in the afternoon, perhaps no higher than 99 degrees (98.6 is normal). c. Tiredness. d. Loss of weight. e. Night sweats. These five are the danger signals. One can best avoid the disease by living a healthful life, with plenty of sleep, a varied wholesome diet, pure water, and

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exercise in the open air every day. Any one who is trying to get along on less food or less sleep than he needs is a good candidate for tuberculosis. (3) Both your mother and your brother should have a careful examination and X-ray of the chest. (4) Your niece should have surgery done if it is decided by your doctor that it is necessary. Modern surgeons give their patients an anaesthetic so that there is no pain.

MIGRAINE HEADACHE: *Ques.*—"Very suddenly I get a heaviness in the head in the forenoon. This increases gradually and a one-sided headache begins and gradually becomes more and more painful. Along with this I feel nauseated and sometimes vomit. The next morning the pain and other conditions mentioned pass off completely, and I regain my normal health again. This occurs about once or twice a month, and I have had these attacks since childhood. My father and brother also suffered from the same complaint. Please suggest ways and means whereby I can be cured."

Ans.—Your description of your headache sounds very much as if it were migraine headache as constant periodic one-sided headaches accompanied by nausea are of this origin. There is no cure to the best of my knowledge but there are a number of modern drugs which may give you marked relief. You should consult your doctor as to the advisability of using them in your particular case and as to the exact dosage suitable for you. The following medications are useful in some cases: 1. Ergotamine tartrate often called gylnergen, obtainable from Sandoz. 2. Leutoeylin. 3. Histamine injections to produce desensitization.

SINUSITIS; ANTRUM: *Ques.*—"I read in your December issue of HEALTH that chlorophyll nose drops are beneficial in the treatment of sinusitis. My son is suffering from this complaint and is greatly in need of relief. Kindly tell me where these drops may be purchased. (2) Please give me the name of a specialist who can treat antrum."

Ans.—(1) I have not seen any chlorophyll nose drops advertised here in India as yet. May I suggest that your son try inhaling powdered penicillin for his sinusitis. His doctor can obtain the powder and a special individual inhaler from Abbott laboratories in Bombay. His particular case may require more than this so have his doctor examine him carefully and follow his advice. (2) The best way to locate a recognized specialist in your locality is to ask the secretary of your local medical society to give you the name of a doctor whom he knows to be trained in the particular specialty you require.

TAPEWORM: *Ques.*—"A relation of mine is suffering from tapeworm and we find that the doctor's medicine has given her no relief. One well-known doctor prescribed 'Pelletrine de Tauret' the

French medicine which is not available on the Indian market. Please let me know what other treatment she should have."

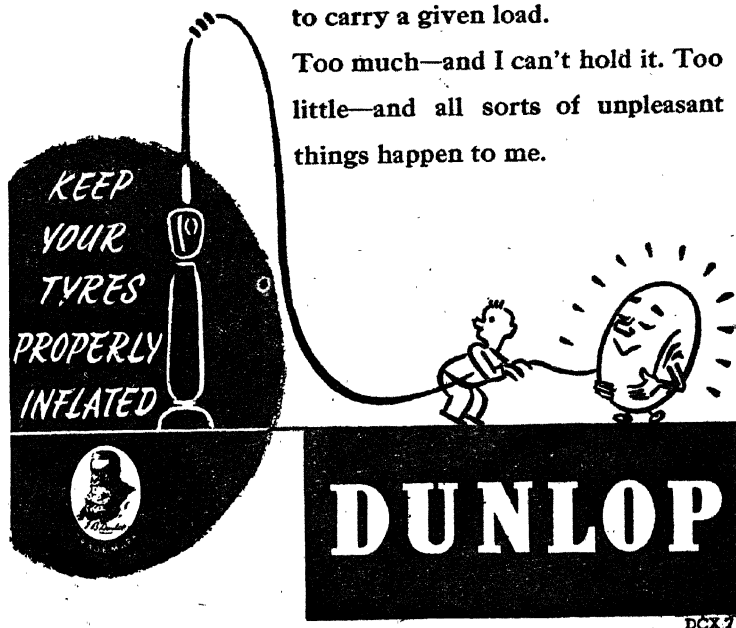
Ans.—Pelletrine is a standard tapeworm medicine. Besides this there are a number of remedies which are standard for tapeworm. Most of them are toxic and should be given only under the

direction of a physician. Male fern is a standard substance but it loses its potency if stored too long. Fresh pumpkin seeds are sold by many authorities to be quite effective and practically non-toxic. These are given as a paste and it is stated that up to six ounces of this may be given. It often requires more than one attempt to get the



QUICK ! I can feel an attack of underinflation coming on and it might be fatal. You see, I'm really only a container for air, and there's an exact amount of air I should hold—specified in pounds pressure—to carry a given load.

Too much—and I can't hold it. Too little—and all sorts of unpleasant things happen to me.



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"head" of the tapeworm and after tak-
ing worm medicine the motion should
be searched carefully to ascertain
whether the head has been passed or
not. If not then one should wait a
month and try again. As you know
tapeworm infestation is acquired by
eating slightly underdone meat which
contains the larvæ of the tapeworm.
If one adheres to a non-vegetarian diet,
thorough and complete cooking of all
meat is essential to avoid reinfestation.

FILARIASIS: Ques.—"Is filariasis
transmitted by bodily contact and is
there any remedy for filarial swelling
of the leg?"

Ans.—Filariasis is not contagious nor
is it transmitted by bodily contact of
any sort. The best treatment is preven-
tion of recurrence of attacks, for as yet
no really good treatment has been de-
veloped. The parasites which cause the
disease are carried by mosquitoes so
that avoidance of being mosquito bitten
is the essential thing in avoiding the
disease. Mosquitoes are most active at
dawn and dusk. Methods of protection
to be observed are: 1. Wear long-
sleeved shirts and trousers. 2. Apply
some mosquito repellant to the ex-
posed skin and to the clothing where
it fits tightly over the shoulders, etc.
Eveready Formula 612, Skat (Dime-
thyl phthalate) and citronella cream are
popular mosquito repellants. 3. Sleep
inside a mosquito net at night. Be sure
the net has no holes in it and that it
is properly tucked in under the bed-
ding and no part of the body touches
it as mosquitoes can bite one through
the net if an arm or a leg is against
the side of the net. Sleeping under a
fan affords some protection as mos-
quitoes shun moving air. 4. Another
form of protection is to have the whole
interior of one's house sprayed with
D. D. T. so that there is a residual
of 200 mg. per square foot. The spray
kills mosquitoes and other insects and
is effective for three or four months.
Any infections or complications of the
disease should be treated under the
personal direction of a skilled physician.

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Delayed Vision

AMERICA'S giant Palomar telescope, the "eye" which astronomers expect will enable them to see and photograph eight times as much of the universe as has been seen and photographed up to now, is not yet functioning perfectly. Dr. Ira S. Bowen, director of the Mount Palomar Observatory in California, says the telescope may not be ready for regular astronomical work until late in 1949.

The difficulty, according to Bowen, lies in the mirror, which is 200 inches in diameter and delicately curved to trap light from great distances. Because of a slight defect in grinding the mirror, it has a tiny "bulge." Its outer edge, near the rim, is 20 millionths of an inch too high, causing distortion. Another difficulty is that the mirror does not react evenly to temperature changes. Its outside edge expands and contracts more rapidly than its centre, temporarily changing its required curvature enough to prevent perfect observation.

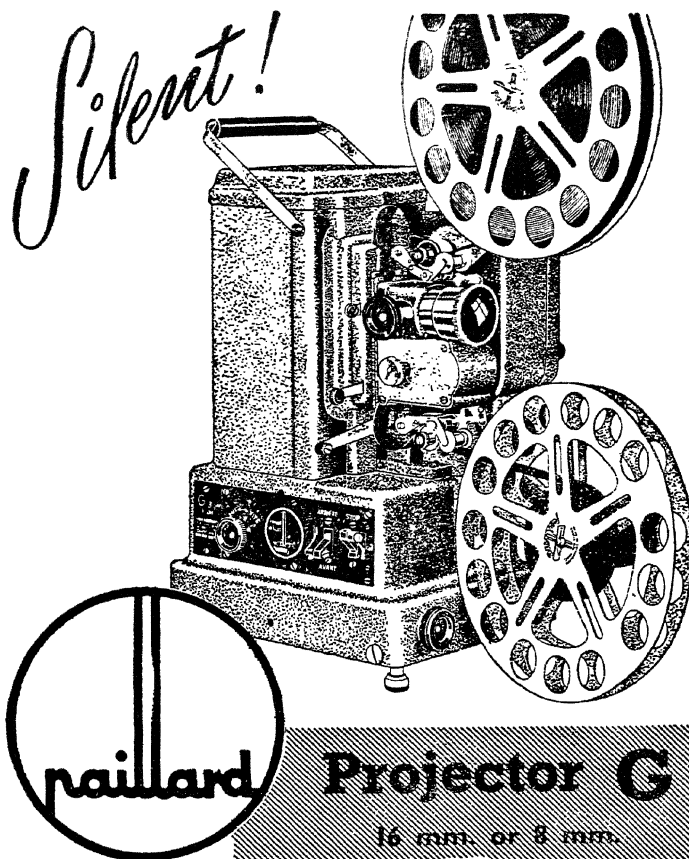
Bowen says a set of small fans will be installed to keep the temperature more uniform around the mirror. If necessary, it may be insulated to slow its response to heat or cold.

Once the temperature difficulty has been met, the "bulge" may yield to minute adjustments in the 36 mechanical "muscles" installed on the back of the mirror. These intricate devices counteract the pull of gravity and keep the 14.5-ton "eye" in proper position as it slowly scans the sky. If the "bulge" still persists after readjustment of the "muscles," Bowen says, the mirror can be taken down for more polishing.

He expresses confidence that the telescope's mirror, which is twice the diameter of the largest now in operation in the world, eventually will be put in perfect working order. Then, it is anticipated, astronomers will be able to penetrate space to a distance of 1,000,000 light-years (the distance that light, travelling at a velocity of 186,000 miles a second, would go in 1,000,000 years).—*USIS*.

Reckon what is in a man not what is on him, if you would know whether he is rich or poor.

—*Ward Beecher*.



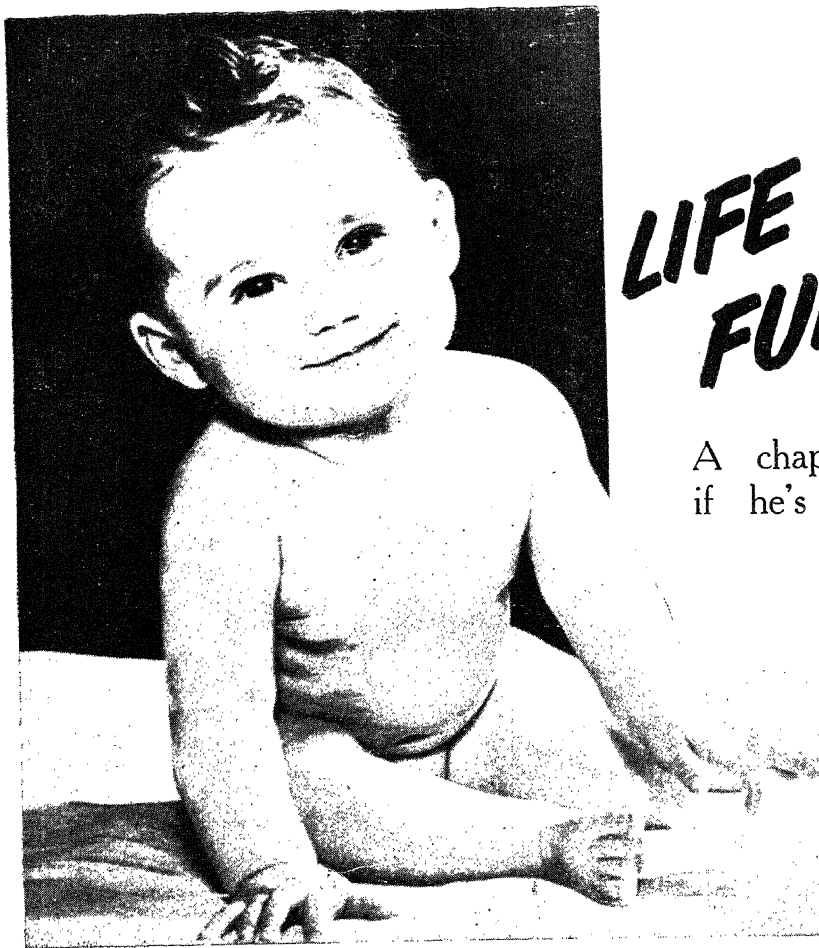
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THE FETISH OF THE EVOLUTIONISTS

GEORGE MCCREADY PRICE

MOST sacred of all the sacred cows, in the eyes of the evolutionists, is the theory of the long geological "ages," marked off by the differential dating of the fossils. Characteristic of each of the successive "ages" are certain kinds of fossils, termed "index fossils." And the long geological "ages" are classified into a definite succession by the kinds of fossils they contain.

As it works out in actual practice, a geologist might be blindfolded and taken out to an entirely new region, and if he found certain kinds of shell-fish, or the bones of certain reptiles, or the teeth of a mastodon, he would without hesitation give the "age" of the rocks in which they had been found. It makes no difference whether the rocks are hard or soft, black shale or white limestone, neither does it make any difference what kinds of beds are above or below. When the "index" fossils are found, that settles the matter.

The theory of evolution is, and always has been, far more dependent upon this theory of the fossils having lived in a definite sequence, than on any other idea, almost more than on all other ideas combined. And today, when, as the late John Burroughs declared, Darwin has been shorn of his selection theories as completely as Samson was shorn of his locks, the main theory of evolution still stands strongly entrenched in the minds of hundreds of millions, due almost wholly to the supposed ability of geologists to differentially date the rocks according to the fossils they contain.

The essential idea about the geological "ages" is not their great length, for that is always considered very indefinite, very elastic. The prime idea is the exact serial order in which they follow one another, and this exactness of serial sequence is derived wholly from the theories about the fossils.



Tracts of a carnivorous dinosaur found on the "Painted Desert" of Arizona.

The theory of the geological "ages" does not have any other foundation than the supposed differential dating of the fossils, *and never did have*. Professedly based on the infallable record of nature's own diary engraved in the rocks, these geological "ages" are simply the *devil's counterfeit of the six days of creation*. They are just an *anti-Genesis* and the cleverest trick the devil could invent to counterfeit the record of a creation in six literal days. This has always been their essential nature, and always will be.

Anyone who has read my books attentively knows that my indictment of geological theories has been very largely directed against this evolutionary succession of the fossils. I have never denied that in many lo-

calities a definite sequence can be shown which is somewhat similar to the sequence in various other places. But I have always denied that this sequence holds all over the globe, and I have shown that other sequences are known in hundreds and even thousands of places. And I have supported these assertions by facts and arguments which have never been traversed or denied by anyone.

Now some of the popularizers of modern science have been reading up in the standard geological literature and have discovered that universally the geologists affirm this regular sequence of the fossils. And these writers ask:

"Are these men not to be trusted? Are not these eminent scientific men perfectly honourable and truthful,

and are they not accurate in reporting what they have found in the field, here and there and all over? And why should we not accept their conclusion? Then is it not clear that we must adapt our interpretation of the Bible to conform to the geological 'day-age' theory?"

But let us now see how many great systems or sets of rocks are recognized by geologists.

Sixteen, if the two sub-divisions of such groups as the Carboniferous are treated as of major rank, and if the three or four subdivisions of the Tertiary are also to be counted. They are to be read from the bottom upward, which is the true historical order, in the minds of the geologists. And the total of these systems, or the total "geological column," as it is called, is estimated at about 500,000 feet, or let us say, one hundred miles.

But is any such enormous thickness of fossil-bearing strata ever found in any one locality?

Of course not. A maximum of about three miles has been found in a few places; but the great majority of places around over the world have less than half of even this thickness, while over wide stretches of every continent the stratified beds are less than a mile in thickness.

Then how is the grand total of a hundred miles obtained?

That is very easy. It is computed in the library of the museum. The maximum of each "type locality" is added to all the other, and thus the total for the world is just a matter of simple arithmetic. And it is always the sequence of the fossils in this grand total which geologists have in mind when they speak about the invariable sequence of the fossils. Also it is on this total as an outline, as a sort of historical spinal column or backbone, that the flesh and blood of the evolutionary theory has been constructed through the years.

I have never thought of denying that geologists frequently employ several objective or common-sense methods in tracing "equivalent" strata from one locality to another. Nor have I ever tried to evade the fact that in many places Paleozoic beds do occur below Mesozoic, and that in other places Mesozoic are found below Tertiary ones. But out of the sixteen systems mentioned above as composing the grand total of one hundred miles, it is seldom the case that more than *three* or *four* of them ever occur in one locality; usu-

ally only about *one* thick set is present or is well represented, the other two or three are present only as thin samples. In many localities we find only one of these sixteen systems, with it resting on the bottom or the primitive, as if it were just as old as any other elsewhere. And frequently it may be number six or number ten, or even number twelve or number sixteen which is thus at the bottom, and occupies the entire beds to the top of the surface of the ground.

Again, in scores or even hundreds of instances, one of the younger beds, let us say number twelve, is found directly upon one very much older, let us say number sixteen or number ten, *with all the others missing*, although the two sets of beds are strictly *conformable*, and every physical evidence would indicate that the two beds must have followed one another in quick succession. Such examples are known among geologists as "deceptive conformities," meaning that the physical evidence is not to be trusted, for the fossil evidence proves them to be many "ages" apart.

Thus these numerous instances where "young" beds occur on the bottom covering wide areas, and the many examples of "deceptive conformities," with great blocks entirely missing, would seem to prove to any unbiased mind that the fossils cannot truthfully be said to occur always in the same relative order in all parts of the world.

Would it not be safe to say from merely these lines of evidence, that a very considerable amount of theory must be employed in assembling beds from distant localities, and constructing them into this formidable total of a hundred miles?

It has proved impossible to trace the physical continuity of beds across any large mountain range. All stratified beds are *lenticular*, and thin out at the edge and disappear when traced any considerable distance, being replaced by others, or often interfingering with others. These stratigraphic details are often used in tracing one set of beds across a country, but always the fossils are treated as the supreme court of appeal, and no decision is allowed to stand which is contrary to the fossil evidence.

And how are these precious "index fossils" selected? For a full century now, the guiding star in all this work has been the noted (or *notorious*, if you prefer) "law of compari-

son," enunciated by Louis Agassiz, then little more than a boy, by which the geological sequence of any of the classes of animals—fishes, gastropods, trilobites, shell-fish, etc., is to be established by comparison with the embryonic development of a modern individual of this class.

In that early day, slightly over a century ago, the geologists were anxiously looking for some key whereby the fossils from distant deposits could be arranged in their "true" historical order; and this hint of the brilliant young Swiss was eagerly accepted as solving the difficulty. It was only very much later that the results of this method were turned completely around, and made into Ernst Haeckel's recapitulation theory.

But at the time I am referring to, in the middle thirties of the nineteenth century, the students of the rocks and the fossils joyfully accepted the key given by Agassiz; so that from that time forward the final decision concerning the geological date of any deposit in China, in Alaska, in Patagonia, or in Tibet, was largely taken out of the hands of the field men, and rested with the paleontologists in their museums.

We can now answer the question raised above. How are these "guide fossils," or "index fossils," selected from the multiplied thousands of others, these others being considered unreliable or ambiguous in this matter of telling us the age of a set of beds? *They are selected by the paleontologists in the museums.* And of course, sooner or later some field man will be able to discover some sequence here or there which will correspond with the rules established by the men at the museum, thus establishing a "type locality," to which all subsequent investigators can be pointed, as the visible example of the true geological sequence for the particular fossil animals dealt with.

And from the establishment of this method dates the custom, now so universally followed, of the field worker boxing up some of the best specimens he has found, and sending them to headquarters, to be passed upon by the judges there located. And in case of any serious difficulty in settling on the exact "age" of a set of beds by this method, there is always the standing committee on such questions at the Washington Geological Survey, U. S. A., which has been in continuous session for

some three-quarters of a century.

And then to complete the beautiful circle of reasoning and of deceiving the public, the modern evolutionists "prove" that their theory of organic development repeats or recapitulates the geological history as found in the rocks. As in the old Hindu fable, the serpent is eternally chasing its tail.

The plain unvarnished fact is that this entire subject of classifying the fossils into successive "ages" for the world as a whole is rotten with artificiality and subjectivity. No method of correlating the strata on opposite sides of an ocean or even a mountain range, or any two widely distant localities, has ever been suggested by anyone anywhere or at any time, except by means of the scheme of "index fossils."

But with the fossils alone determining the "age" of every set of beds, one might suppose that occasionally beds might be found occurring in the exact reverse of the standard order. Have any such instances been discovered?

Plenty of them. They are found in all parts of the world which have been well explored geologically. But with the settled conviction strong in their souls as to the sequence in which the rocks (or fossils) *must* have been deposited in the long ago, geologists have always, sooner or later, been able to invent a method of explaining away the perplexing evidence.

Examples of this sort were discovered in the Alps about three-quarters of a century ago; and since then they have been reported in a steady stream from all parts of the world. Such instances are now usually called "low-angle faults," or "thrust faults"; for the theory is that the "old" rocks on top of "younger" must have been pushed there by some mechanical force, and the two sets of beds are usually so horizontal over miles and miles of territory, and look so perfectly like any normal stratigraphic sequence, that drastic theoretical suppositions have to be imagined to "explain" the situation. For, as Albert Hein of the University of Geneva wrote to me forty years ago, geologists are firmly convinced that "the most incredible mechanical explanation is more probable than that the evolution of organic nature should have been inverted in one country as compared with another."

Nobody has ever explained the

mechanical method by which a comparatively thin set of rocks could be pushed across a tract of country for a score or more of miles, the push coming from behind at a distance of this many miles away. Where and how could such a force be applied?

In summary of the foregoing, the fact needs to be stressed that the theory of geological "ages," founded entirely on the differential dating of the fossils, is not only the most sacred of all the sacred cows of the evolutionists, but it is also plainly and positively an *anti-Genesis*. This anti-Genesis character of the idea may be proved in three ways: (a) by the history of the beginning of the theory under Baron Cuvier and Louis Agassiz; (b) by the logic of the case, when these geological "ages" are compared with the six days of the first chapter of Genesis; and (c) by the entire subsequent history of the way in which these "ages"

have ever since been used to "prove" that the days of creation were long periods of time.

The plain fact is that there are certain wide areas of scientific research on which the great Jehovah has long maintained a notice reading, NO TRESPASSING! One of these areas takes in the entire subject of origins. The divine record is that when God had completed the work of creation, He ceased, or rested, as a lawyer rests his case when it is finished. Then the Creator established the Sabbath as an everlasting memorial of the fact that God's creation is an absolutely finished work, and that nothing like it is now going on. Accordingly, we have this divine reason why scientists cannot, by any objective study of the present conditions of nature and of them alone, obtain any clue as to how creation itself was accomplished.

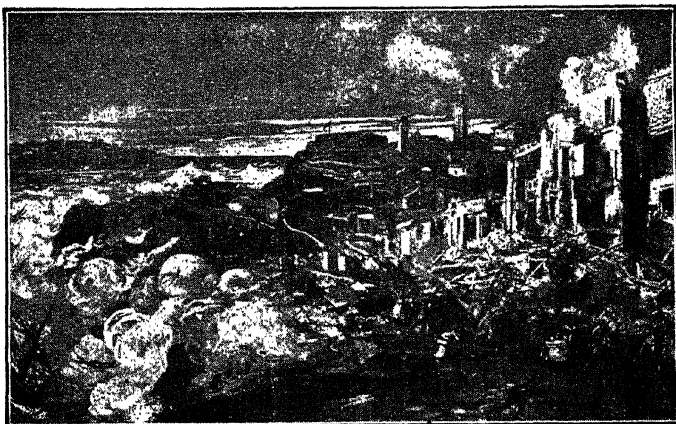
NO HIDING PLACE

M. L. NEFF.

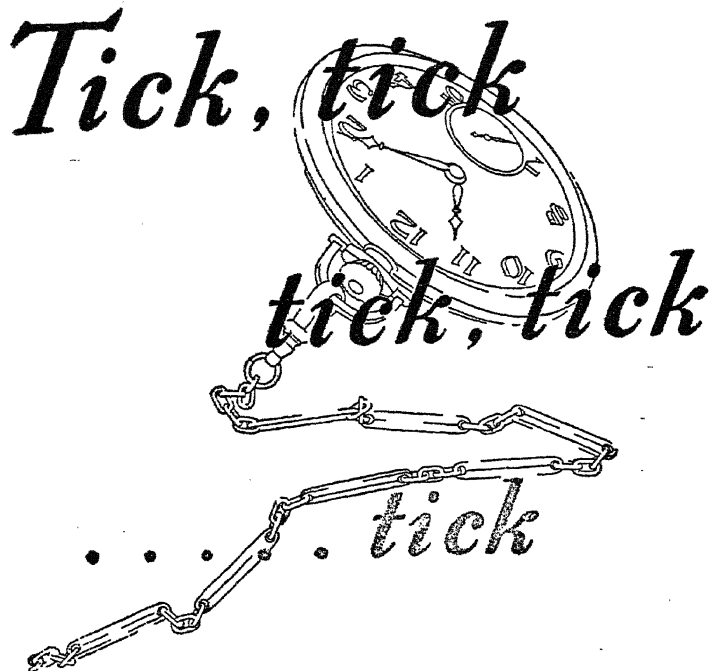
TICK, tick, tick! It was July 1. The Bikini Lagoon was outwardly a scene of tropical beauty. On the battleship "Pennsylvania" the electrically operated metronome was hooked up to a radio transmitter. It marked off the last minutes before the explosion of the atomic bomb. *Tick, tick, tick!* "It was like a voice of doom," says the science reporter of the New York Times, "tolling off the world's last minutes."

Tick, tick, tick! "Then suddenly we saw it—a huge column of clouds, dense, white, boiling up through the

stratocumulus, looking much like any other thunderhead but climbing as no storm cloud ever could. The evil mushrooming head soon began to blossom out." With this description of the first atom bomb explosion at Bikini, Daniel Bradley, M.D., opens his account of the day-by-day experiences of the scientific group who studied the after effects of the atomic bomb, in the new book, *No Place to Hide* (Little, Brown and Company, Boston). It is the firsthand account of a sensitive, scientific mind that witnessed the



There will be no place of safety in the general smash-up which the scientists predict.



horror of atomic warfare, of a man who realizes what the Atomic Age is all about.

Tick, tick, tick! Not only does the doctor assert that there are no effective countermeasures or defences against radio-active poisons, but he warns that it is impossible to free a battleship or a great city of these poisons after contamination.

In *No place to Hide* Dr. Bradley states four ominous conclusions: "1. That there is no real defence against atomic weapons. 2. That there are no satisfactory countermeasures and methods of decontamination. 3. That there are no satisfactory medical or sanitary safeguards for the people of atomized areas. 4. That the devastating influence of the bomb and its unborn relatives may affect the land and its wealth—and therefore its people—for centuries through the persistence of radioactivity."

This is not mere scientific theory; these conclusions have been proved by the experiments upon thousands of animals on the land and on the ships at Bikini and in the fearful ordeal of war at Hiroshima and Nagasaki.

Tick, tick, tick! An unseen metronome is measuring off the minutes, the hours, and the days. The Atomic Age is here. There is no turning back. But in spite of the tests that have been made and the ghastly results of the bomb's use upon

Japan, humanity does not grasp the horrible finality it promises. Our world goes on, heedless of impending doom. "If there is anything the world needs today," declares the science authority, William L. Laurence, "it is a reawakening of its consciousness to the fact that the atomic bomb is not just another weapon but the greatest cataclysmic force ever released on earth; that unless all the nations of the world agree to an effective means of international control it must lead inevitably to the destruction of civilization."

Tick, tick, tick! Those who have the most facts concerning the atomic bomb are the most fearful of its results. "We don't know to what distance from Bikini the radiation disease may be carried," warns Dr. Bradley in *No Place to Hide*. "We can't predict to what degree the balance of nature will be thrown off by atomic bombs. We certainly have little idea what the long-range effects on our lives would be from an all-out atomic war, devastating our shores, our fish, and our agricultural industries. But at least at this time we do know that Bikini is not some faraway little atoll pinpointed on an out-of-the-way chart. Bikini is San Francisco Bay, Puget Sound, the East River."

Tick, tick, tick! Truly there is "no

hiding place" on our globe. An atomic war with its kindred weapons could make vast areas of the earth uninhabitable. It would no doubt send millions of human beings to destruction; yet the man in the street goes on, careless and indifferent, talking of atomic weapons, robot missiles, bacterial warfare, jet-propelled bombers, and atom bombs as if they were toys in a child's playroom.

Facing this preview of death and destruction, what is the attitude of the Christian to the Atomic Age? First of all, it confirms his faith in the prophecies of the divine word concerning the certainty of the second coming of Christ. No greater proof that God must intervene in this world's tragedy has ever been given man; there is no other way of salvation.

The child of God also claims the precious promises of the Bible. He has safe refuge when the world can find no hiding place of its own making. With the psalmist he can pray: "Keep me as the apple of the eye, hide me under the shadow of Thy wings." Psalm 17:8. He can say with implicit faith: "In the time of trouble He shall hide me in His pavilion: in the secret of His tabernacle shall He hide me; He shall set me up upon a rock." Psalm 27:5. Isaiah represents Jesus as a sheltering rock when he says: "A man shall be as an hiding place from the wind, and a covert from the tempest; as rivers of water in a dry place, as the shadow of a great rock in a weary land." Isaiah 32:2.

When blinding storms sweep across the wastelands of a sin-cursed world and there is no shelter of man's devising, when darkness and despair mock every man's every effort, then Jesus Christ, the Rock of Ages, is a true hiding place, an impregnable shelter. *Tick, tick, tick!* Each passing moment urges us to seek God with all our heart. Each new discovery in the realm of science portending destruction teaches us the futility of man's efforts to build a better world. *Tick, tick, tick!* Thank God for a hiding place, not in some future moment of crisis, but now, today. Have you ever made Jesus your security, your strength, your hope? "Acquaint now thyself with Him, and be at peace: thereby good shall come unto thee." Job 22:21. "Behold, now is the accepted time; behold, now is the day of salvation." 2 Corinthians 6:2.

